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~~Mr. Wm. Scot~~

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Presented to the Royal Medical
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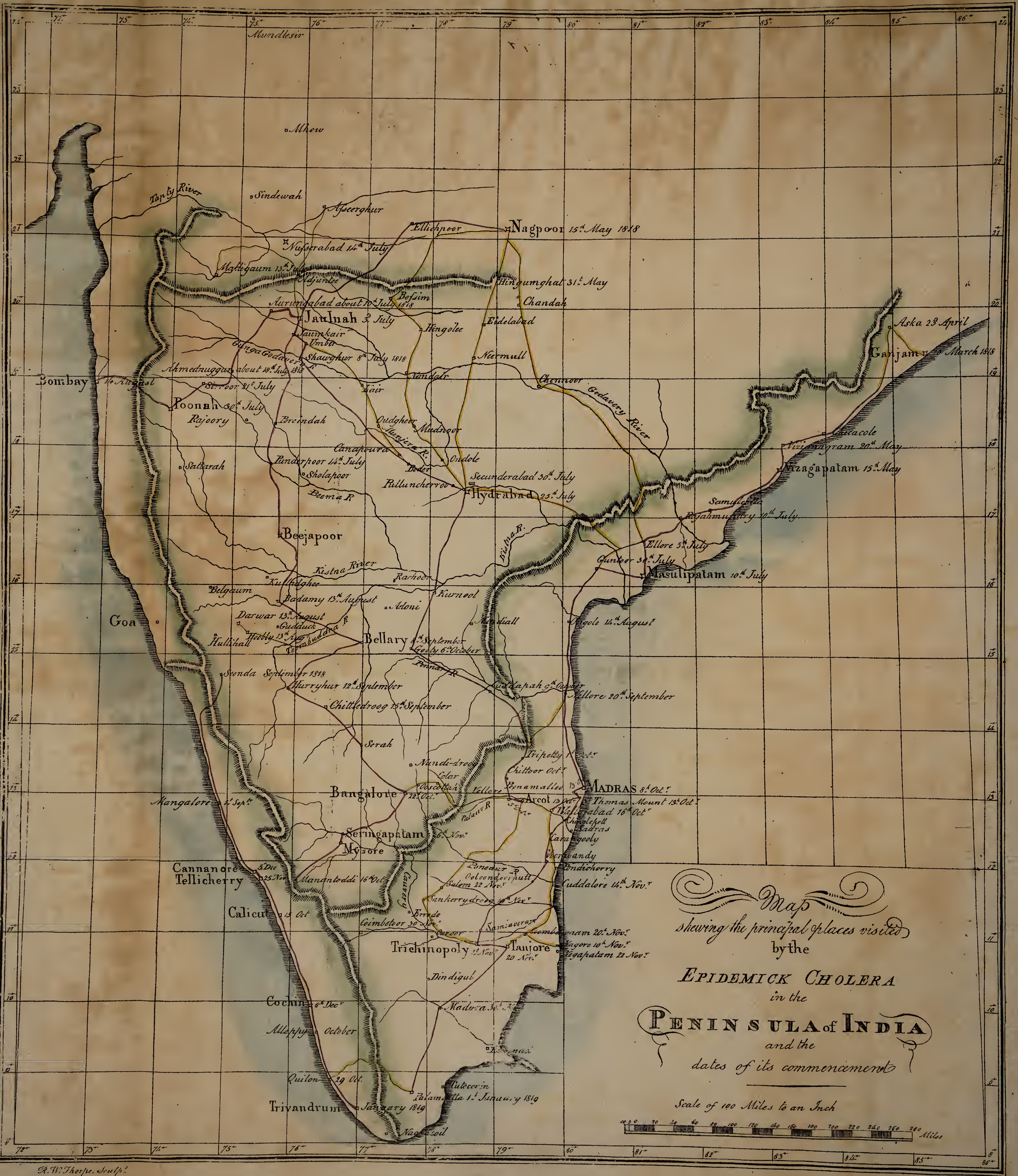
MEDICAL SOCIETY EDINBURGH



Map shewing the principal places visited by the EPIDEMICK CHOLERA in the PENINSULA of INDIA and the dates of its commencement

R. W. Thorpe, Sculpt.

REPORT

ON THE

EPIDEMIC CHOLERA

AS IT HAS APPEARED IN THE TERRITORIES

SUBJECT TO THE

PRESIDENCY

OF

FORT ST. GEORGE.

MEDICAL SOCIETY EDINBURGH

DRAWN UP BY ORDER OF THE GOVERNMENT,

UNDER THE SUPERINTENDENCE

OF THE

MEDICAL BOARD,

BY

WILLIAM SCOT,

Surgeon, and Secretary to the Board.

MADRAS:

PRINTED AT THE ASYLUM PRESS,

1824.

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REPORT.

When the Epidemic Cholera seemed to have completed its progress throughout the territories of this Presidency, it was intimated by Government to the Medical Board, that the interests of the medical science and of humanity, would probably be promoted by a history of that disease, as it had appeared amongst the population, as well as amongst the troops; with an account of the various modes of treatment, which had been at different times adopted by different Medical Officers at their respective stations, and the success, with which they had been attended.

The Honorable the Court of Directors have also subsequently ordered, that the particulars of the progress of Cholera through these territories, and the different modes which had been adopted in the treatment of persons afflicted with it, should be prepared and printed. In making this communication the Honorable Court stated, that they had caused the reports which had been drawn up under the superintendence of the Bengal and Bombay Medical Boards, to be circulated amongst the most eminent of the Faculty in England; and the Court expressed their hope, that the circulation of these documents, together with that of a similar report from this Presidency, might tend to produce opinions and advice calculated to check the ravages of this afflicting malady. It is in pursuance of these instructions, that the present report has been prepared.

In addition to the measures for collecting professional information, which the ordinary discipline of the service implies, the Medical Board did not neglect, upon the first appearance of the epidemic cholera, specially to call the attention of all Medical Officers on this establishment, to the necessity of contributing such remarks respecting the disease as their opportunities for observation might enable them respectively to do; and it is a just tribute to the profession, which is gladly and gratefully awarded, to state, that the call has been fully answered by almost every member of it. A mass of information has thus been furnished, which leaves to the writer of this report little else than the labour of selection and arrangement. Many valuable communications have been received in a condition, fitting them to be at once offered to the public: and these will accordingly be found under the proper head in this report. Others, forming indeed a great proportion of the whole, though intrinsically valuable, and extremely interesting, are yet drawn up in a desultory manner, and in an insulated form, which precludes the propriety of their publication. In disposing of the contributions of the latter description, the utmost care has been taken to embody the facts and observations contained in them, under the proper heads of pathology, and therapeutics. No observation has been set aside *merely* as being improbable; no theory absolutely rejected *merely* as being untenable: for our present state of knowledge with regard to cholera did not appear to warrant the absolute rejection of any medical opinion concerning it. Every alleged fact, and distinct theory, therefore, which have been recorded, find a place in these pages; and are thus left to be tried by the test of time and experience. So scrupulous indeed have the Medical Board been in the exercise of their authority, throughout the course of this destructive disease, that, even at the hazard of incurring the imputation of empiricism, they have given currency to the notice of remedies, and sanctioned their trial, although the exhibition of them might be little supported by any received system of medicine.

It would doubtless, in some respects, have been more desirable in an official report, to have published every communication as it had been received, and with the name of its author, rather than to offer a digest of them: but, independently of the objections that have just been assigned, there existed another, which was, the great uniformity of these reports: for, though all Medical Officers have not been equally fortunate in their opportunities of observation, nor possessed of equal leisure, and an equal degree of zeal in the cause of science, yet by far the greater proportion of the reports, though occasionally relieved perhaps by a diversity of opinion on the *theory*, still present, in respect to the *history* of the disease and general plan of *treatment*, a repetition, which it would be altogether unprofitable to publish. It is perhaps more necessary to offer some apology to those Gentlemen whose reports, written in haste, and on the first appearance of the disease, are now published at this late period : and, had our knowledge of its nature, and method of cure kept pace with the extended means of observation, which the lapse of time has unhappily too amply afforded, there might have been good reason for objection. The best apology, however, will be found in the reports themselves, which even when contrasted with those written at later periods, and under circumstances in every respect more favourable, will still be found to present most interesting matter, and to redound greatly to the credit of their authors, many of whom are now no more. Whenever supplementary remarks have been received from the same writer, they have been appended to his original communication.

Although no paper is inserted in this report, which is not official, or authenticated, nor any thing advanced, unless founded on materials exclusively of that nature, yet it is nevertheless to be remembered, that medical *facts*, are too often merely medical opinions; their authenticity, in reference to the views of the narrator, is undoubted : but, liable, as even the most deliberate and sagacious observers are, to error and misconception, we are bound to receive with due caution and circumspection any *facts* or *opinions*, which are palpably at variance with general experience. It is presumed, however, that the report will be found upon the whole to convey a very considerable and unexceptionable mass of evidence respecting the nature of that species of cholera, which has so long afflicted the Indian community : and, while we sincerely hope that the actual presence of the disease in Britain will never afford more immediate means of judgment, we would still echo the sentiment of the Honorable Court, that the eminent of the Faculty there, may be more successful in their researches into its nature, cause, and cure, than their brethren in this country have been.

While the constitution of the Company's Medical Service is singularly well adapted for the collection of information, this advantage has almost been rendered a dead letter from the want of periodical printed reports ; a want the more especially felt in a country where the change of functionaries is rapid and perpetual, and, consequently, where individual or personal knowledge is of less public avail. The evil here complained of has been strikingly exemplified in the instance of cholera, which, on its first appearance, was considered to be merely a severe, or unusual form of the disease known by the name of cholera morbus. This idea, however, being soon, and perhaps too hastily, abandoned, a persuasion was then almost universally entertained, that it was in fact *a new disease* : and, with a strange inconsistency, an expectation seems immediately to have arisen, that the nature of this new disease was more perfectly discoverable than the nature of those diseases, which have baffled the experience of ages ; and farther, that a specific cure for it, was no less an object of easy attainment. Hence arose that diversity of opinion, and variety of practice in cholera, which at first generally prevailed, and which, it is feared still continues to exist to a very considerable degree. When it was found that a complaint, similar in all its symptoms, had been described in several European publications on diseases of India, the knowledge of the circumstance was too confined, and came too late to do away the evil, which had arisen. The Indian community, including the Medical profession, were taken, as it were, by surprise : the disease, if not new in reality, was new at least to them : and the pre-existence of cholera, in a form no wise different from that which it has on this occasion assumed, has been somewhat reluctantly admitted, and too much kept out of sight in reasoning on its pathology.

Appearance of Cholera in 1787 at Arcot.

This state of things, however, cannot be imputed to the want of foresight in our predecessors ; since we find the following notice entered in the proceedings of the Medical Board of this Presidency, under date the 29th November

1787, but which, being confined to a manuscript entry in the records of an office accessible only to its members, it became, as has been observed, a dead letter.

" A disease having in October last prevailed at Arcot similar to an Endemic that raged amongst the natives about Paliconda in the Ambore valley in $\frac{1769}{1770}$, in an army of observation in January 1783, and in the Bengal detachment at Ganjam in 1781, and several other places at different times, as well as Epidemic over the whole coast in 1783, under the appearance of Dysentery, Cholera Morbus, or Mordyxim, but attended with spasms at the præcordia, and sudden prostration of strength as characteristic marks; seeing this Board is ordered to be a record, the Physician General recommends as a guide to future practitioners, that a letter from Mr. Thompson, Surgeon of the 4th Regiment, containing an account of the dissection of one of the patients who died of the disease, describing the state of the viscera, may be entered on the face of the proceedings, together with two letters from Mr. Duffin, Head Surgeon at Vellore; and one from Mr. Davis, Member of the Hospital Board, containing an account of the causes, symptoms, and successful treatment, of the sick, by the use of the hot bath, and fomentations, supporting the vis vitæ with wine, &c., and removing the putrid colluvies from the intestines. The Hospital Board, sensible of the advantages that may result to the service from the mode proposed by the Physician General, direct their Secretary to enter the Letters he has mentioned, as follows." These letters will be found in the extracts, page 239.

Supposed to be noticed in Hindoo writings.

Cholera has been supposed to be described in the medical writings of the Hindoos, some of which are of great antiquity, as may be inferred from their being attributed to Dhanwantari, a mythological personage, coinciding in character with the Esculapius of the Greeks. In a work of this author, styled the Chintamani, the disease resembling cholera is classed under the generic term Sannipata, which includes all paralytic and spasmodic affections. The species of Sannipata supposed to be the spasmodic, or epidemic cholera, is called Sitanga, and is thus described. " Chilliness like the coldness of the Moon over the whole body, cough and difficulty of breathing, hiccup, pains all over the body, vomiting, thirst, fainting, great looseness of the bowels, trembling of the limbs." Cholera is supposed by others, to be classed under the generic term Ajirna, or Dyspepsia. The species, which is considered to correspond with the spasmodic, or epidemic cholera, is called Vidhumar Vishúchi, and is thus described. " The Vishúchi is most rapid in its effects; its symptoms are, dimness of sight in both eyes, perspiration, sudden swooning, loss of understanding, derangement of the external and internal senses, pains in the knees and calves of the legs, griping pains in the belly, extreme thirst, lowness of the bilious and windy pulses, and coldness in the hands, feet, and the whole body." The first of these descriptions would apply more perfectly to the epidemic cholera, were it not that in a commentary thereon, in a Tamil work styled the Yugumani Chintamani, the Sitanga is stated to be incurable, and fatal in 15 days. The latter description is perhaps less applicable, as not noticing either vomiting or purging, amongst the symptoms. An attempt has been made to reconcile these two opinions by supposing, that the Vishuchi is in fact the Sitanga in a more virulent, or epidemic from: but it is not contended that the Vishúchi itself is always epidemic; on the contrary, it is said to be by no means uncommon, and to be described in these familiar, but emphatic words, " being seized with vomiting and purging, he immediately died." These observations are drawn from a letter which appeared in the Madras Courier, dated 2d January 1819, and which was very generally attributed to the pen of a Gentleman well known for his partiality to, and deep knowledge of, Hindoo Literature. This paper being altogether curious, is given in the appendix, together with a very interesting letter from a respectable and learned native, Ram Raz, attached to the College, to whom the paper in question was submitted, in order to be compared with the most authentic copies of the medical works, from which the extracts purport to have been taken.

Noticed by Bontius in 1629.

The Dutch Physician, Bontius, who wrote in the year 1629 at Batavia, thus describes cholera morbus. "Besides the diseases above treated of as endemic in this country, the cholera morbus is extremely frequent; in the cholera, hot, bilious matter, irritating the stomach and intestines, is incessantly, and copiously discharged by the mouth and anus. It is a disorder of the most acute kind, and, therefore requires immediate application. The principal cause of it, next to a hot and moist disposition of the air, is an intemperate indulgence of eating fruits; which, as they are generally green, and obnoxious to putrefaction, irritate and oppress the stomach by their superfluous humidity, and produce an æruginous bile. The cholera might, with some degree of reason be reckoned a salutary excretion; since such humours are discharged in it, as, if retained, would prove prejudicial. However as by such excessive purgations the *animal spirits are exhausted, and the heart, the fountain of heat and life is overwhelmed with putrid effluvia, those who are seized with this disorder generally die, and that so quickly, as in the space of four and twenty hours, at most.*

Such, among others, was the fate of Cornelius Van Royen steward of the Hospital, of the sick, who being in perfect health, at six in the evening, was suddenly seized with the cholera, and expired in terrible agony and convulsions before twelve o'clock at night; the violence and rapidity of the disorder surmounting the force of every remedy. But if the patient should survive the period above mentioned, there is great hope of performing a cure.

This disease is attended with a weak pulse, difficult respiration, and coldness of the extreme parts; to which are joined, great internal heat, insatiable thirst, perpetual watching, and restless and incessant tossing of the body. If together with these symptoms, a cold and fœtid sweat should break forth, it is certain that death is at hand."

In treating of the "Spasm," this author gives the following account. "The disorder of the Spasm, almost unknown with us in Holland, is so common in the Indies, that it may be reckoned among the popular and endemic diseases of the country. The attack of it is sometimes so sudden, that people become in an instant as rigid as statues; while the muscles either of the anterior or posterior part of the body, are involuntarily, and violently contracted. A terrible disorder! which without any primary defect of the vital or natural functions, quickly precipitates the wretched sufferer in excruciating torment to the grave; totally deprived of the capacity of swallowing either food, or drink. *There are, likewise, other partial Spasms of the limbs*: but these being more gentle and temporary, I shall not treat of them.

People affected with this disease look horribly into the face of the bystanders (truculente admodum astantes intuentur) especially, as often happens, when the cynic spasm comes on, and both the cheeks are drawn in convulsion towards the ears; a red and green colour is reflected from the eyes, and face; (ruber et viridis color ex oculis et facie *oritur*) the teeth gnash; and instead of the human voice, a rude sound issues forth of the throat, as if heard from a subterraneous vault; so that to those unacquainted with the disorder, the person appears to be dæmoniac."

In speaking of cholera, Bontius no where mentions the *colour* of the matters evacuated. He talks indeed of æruginous bile: but that would appear, from the context, to refer to its assumed acrimonious quality, rather than to any sensible property: and we shall presently see that practitioners of much later times dwell greatly on the supposed bilious and irritative nature of the evacuations, when it is pretty evident, that they were merely speaking hypothetically. His descriptions indeed are not at all full: for, though he does not mention spasm as a symptom of cholera morbus, he states that Cornelius Van Royen expired in *convulsions*, within six hours from an attack of it. Still, in his description of cholera, where "the heart is overwhelmed," where "those who are seized with the disease generally die," and that within twenty-four hours at most; and in his enumeration of symptoms as marked in italics, every one, familiar with the epidemic cholera as it has prevailed in this country, will probably admit, that he has truly pourtrayed that disease, and no other.

Although Bontius has treated of "the Spasm," and of "the Cholera Morbus," under separate chapters, it is highly probable that these disorders were one, and the same.

It would seem that he has considered the tonic spasm as idiopathic, and the clonic spasm as symptomatic, yet it is evident by the expression, "there are likewise other partial spasms of the limbs," that both these forms of spasm existed in the same patient, a fact which is amply confirmed by innumerable observations in the present epidemic. If it be objected that he does not mention the usual symptoms of cholera as occurring in "the spasm," it may be answered, that neither does he mention the state of the skin, of the pulse, nor of respiration, which functions it is impossible to suppose remained unaffected in such a commotion of the system.

The edition of Bontius, which has been quoted from, is an English translation published in London, 1769: but, from the passages in the original, as inserted in parentheses, it is evident that the translation is not quite correct. The expressions, especially, of the eyes and face "*reflecting*" a red and green colour can only be intelligible by supposing, that the former were suffused with blood, and the latter changed to that ghastly and cadaverous hue, so familiar to us all in the collapse stage of cholera.

By Dr. Paisley in 1774.

The next notice, in point of time, which we find of cholera, is in the copy of a Letter written by Dr. Paisley at Madras, dated 12th February 1774, as given by Curtis, in his publication on the diseases of India. Dr. Paisley says, "I am favoured with yours, and am very happy to hear you have caused the army to change its ground; for there can be no doubt, from the circumstances you have mentioned, that their situation contributes to the frequency and violence of the attacks of this dangerous disease, which is, as you have observed, a true cholera morbus, the same they had at Trincomale. It is often epidemic among the Blacks whom it destroys quickly, as their relaxed habits cannot support the effects of sudden evacuations, nor the more powerful operation of diseased bile.

The first campaign made in this country the same disease was horridly fatal to the Blacks; and fifty Europeans of the line were seized with it. I have met with many single cases since, and many of them fatal or dangerous, of different kinds arising from putrid bile being disturbed by accidental causes, or by emetics or purgatives exhibited before it had been blunted or corrected."

Dr. Paisley does not give any particular description of the disease: and, though he dwells much on the putridity, and acrimony of the bile, he does not allude to the colour or appearance of the evacuations. He observes that "when it (the cholera) is epidemic here, it is totally a disease of highly putrid bile, which operates on the system as poison, and brings on *sudden prostration of strength, and spasms over the whole surface of the body.*" "In relaxed habits, when the *pulse sinks suddenly,* and brings on immediate danger, the same method must be pursued but with more caution." The letter is quoted by Curtis as referring to the cholera morbus, or Mort De Chien: and these extracts will probably be deemed sufficient evidence of the correctness of the reference.

It is highly important to remark, that Dr. Paisley here speaks of the disease as being "*often Epidemic*;" that it prevailed in that form in the "first campaign," and affected both the Europeans and Natives. The particular periods here alluded to are not known, but we have seen, by the extract from the records of the Medical Board, that cholera raged as an endemic, in 1769, or 70.

By Sonnerat, from 1774 to 1781.

Sonnerat, whose travels in India embrace the period between 1774 and 1781, speaks of a disease on the Coromandel Coast, in all respects resembling cholera, and he notices it as "an *epidemical disorder which reigns.*" His account of it is this.

"There is also another epidemical disorder, which reigns, and in twenty four hours or sometimes less, carries off those who are attacked. It never appears but in cold weather."

"Debauchees, and those who have indigestions, are attacked with a looseness, or rather with an involuntary flux of the excrementary matter become liquid, but without any mixture of blood. They have no remedy for this current of the bowels,* which they call a sharp flux, but leave the cure to the care of nature."

"The flux of this kind which reigned some years ago, spread itself in all parts, making great ravages: above sixty thousand people, from Cherigam to Pondicherry, perished. Many causes produced it. Some were attacked for having passed the night and slept in the open air; others for having eat cold rice with curds; but the greater part for having eat after they had bathed and washed in cold water, which caused an indigestion, an universal spasm of the nervous kind, followed by violent pains and death, if the patient was not speedily relieved. This Epidemical disorder happened during the Northerly winds in December, January, and February; when they ceased, the malady disappeared. The symptoms of this disorder were a watery flux, accompanied with vomiting and extreme faintness, a burning thirst, an oppression of the breast, and a suppression of urine. Sometimes the deceased felt violent cholicky pains: often lost his speech and recollection, or became deaf, the pulse was small and concentered, and the only specific which Choisel, a foreign Missionary, found, was treacle and Drogue amere. The Indian Physicians could not save a single person."

"There is great reason to imagine that the perspiration being stopped and reflowing into the mass of blood, by finding its way to the stomach and bowels, occasioned the vomiting, which terminated by this flux."

"That which followed, two years after, was the most dreadful. It did not proceed from the same cause as the first, as it began in July and August: it first shewed itself by a watery flux, which came in an instant, and sometimes cut the deceased off, in less than four and twenty hours. Those who were attacked had thirty evacuations in five or six hours; which reduced them to such a state of weakness that they could neither speak or move. They were often without pulse; the hands and ears were cold; the face lengthened; the sinking of the cavity of the socket of the eye was the sign of death; they felt neither pains in the stomach, cholicks, nor gripings. The greatest pain was a burning thirst. Some brought forth worms by stool; others by vomiting. This cruel pestilence affected all the Casts in general, but particularly those who eat meat, as the Parias. The Native Physicians succeeded no better in their treatment of this disorder, which was again renewed during the Northwinds."

It is by no means easy to determine the precise dates of the epidemic visitations of cholera alluded to in these extracts, as prevailing, in the first instance, "*some years ago,*" and in the second, "*two years after.*"—It is, however, reasonable to suppose, that a disease, which "spread itself in all parts," and carried off "above 60,000 people, from Cherigam to Pondicherry," would not have been passed over without some special notice by Dr. Paisley, in his letter dated 1774 already quoted, had it occurred prior to that date. The presumption seems to be, that Mons. Sonnerat described invasions of epidemic cholera which took place subsequently to the year 1774. That they were certainly, considerably prior to that epidemic, which is stated in the records of the Medical Board to have prevailed "over the whole Coast in 1783," is evident, from the date of the work; and consequently, when viewed in reference to other authorities, it is obvious, that cholera maintained its influence, with little apparent interruption, from a very remote period, down to a date comparatively modern:—Sonnerat notices the " term mort de chien" as being used in India, but applies it to " indigestions," which " are very frequent," and from which " many have died suddenly."

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* Probably "cours de ventre," in the original. The edition here quoted is a translation by Francis Magnus, Calcutta printed, 1788.

Cholera observed at Mauritius in 1775, and in 1819.

It appears from the report of a Committee of British Medical Officers at the Mauritius, which was assembled in the month of November 1819, under the authority of the Government, in order to examine into the nature of the epidemic disease which then prevailed at that Island, that the epidemic cholera was not unknown there. The following is an extract from the report. " The Committee request to say, that they have not, either in this Island or elsewhere, met with a disease possessing the characters of that which now prevails; but that, from the reports of several individuals, some of whom belong to the medical profession, it does appear, that a disease, most strongly resembling in its symptoms, progress, and termination, that now under consideration, did for sometime prevail in this colony in the year 1775."

The symptoms which are detailed by the Committee, as characterising the epidemic of 1819, sufficiently indicate the identity of that disease, with the form of cholera, which prevailed at the same period, and still continues, on the continent of India. " The symptoms, in the two cases alluded to, perfectly corresponded with those of the numerous instances of the disease, which have since occurred. Those more particularly characteristic of the disease are sudden and excessive prostration of strength, with sinking of the pulse; extreme coldness of the surface of the body, which is covered, with cold viscid perspiration; and a distressing uneasy sensation in the abdomen, the progress of which has generally carried off the patient in the space of a few hours "

Dr. Burke, the chief medical officer on the Island makes the following observation in his letter transmitting the report of the committee. " A similar disease prevailed in this island in 1775, after a long dry season, &c. the symptoms, fatal and sudden effects, and duration, of the disease would seem to be exactly the same. A hurricane put a stop to its ravages, which continued for probably two months, and caused a great mortality particularly among the Blacks and people of colour."

But it is necessary to state, that a committee of French Medical Gentlemen, who were assembled under similar circumstances with the British Committee, make no mention of the epidemic visitation of 1775.* Assuming, however, the circumstance to be true, it is highly worthy of remark, that while, as we have shewn in the preceding pages, the Indian continent suffered under cholera, about that period, viz. 1775, the disease had then also extended to that remote Island.

At Ganjam, in 1781.

Cholera appears to have manifested itself pretty extensively as an epidemic in 1781, its appearance on this occasion is thus noticed in the report on cholera by Mr. Jameson, Secretary to the Calcutta Medical Board. " A Division of Bengal Troops, consisting of about 5,000 men, was proceeding, under the command of Colonel Pearse of the Artillery in the spring of 1781, to join Sir Eyre Coote's Army on the Coast. It would appear, that a disease resembling cholera had been prevalent in that part of the country, (the Northern Circars), some time before their arrival; and that they got it at Ganjam on the 22d March. It assailed them with almost inconceivable fury. Men previously in perfect health dropt down by dozens; and those even less severely affected were generally dead or past recovery, within less than an hour. The spasms of the extremities and trunk were dreadful; and distressing vomiting and purging were present in all. Besides those who died, above five hundred were admitted into hospital on that day. On the two following days, the disease continued unabated, and more than one half of the Army was now ill." In a note, it is added, 'The occurrence of the disease on this occasion is noticed in a letter dated 27th April 1781, from the Supreme Government to the Court of Directors; and the destruction, which it caused in this detachment, mentioned in terms of becoming regret.'

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* The description of the Epidemic of 1819, by the French Committee, deserves to be inserted. " Ces phénomènes sont une faiblesse subite, avec des tiraillements, ou douleurs dans les muscles des extrémités, qui font chercher un appui pour ne pas tomber; un refroidissement général de toute la surface du corps; une privation absolue du battement du cœur et de toutes les artères extérieures; une cessation générale de la circulation à la surface, tellement, que la ligature placée sur le bras n'a pu faire gonfler les veines, pour y pratiquer une saignée; et que les ventouses scarifiees ont laissé couler un peu de sang, comme s'il sortait d'un vaisseau affaissé, atone, et presque vuide des évacuations par haut et par bas, séreuses, blanchâtres, muqueuses, rares, se bornant souvent á des efforts de vomissement, et de déjections alunés; les boissons, prises facilement, étaient rarement rejetées.—La face était gripée, sombre, marquant une anxiété intérieure extréme; un decubitus presque immobile sur le dos, ou sur le ventre; les yeux à moitié fermés, le globe relevé sous la paupière; une voix altérée, silencieuse, ou des gémissemens plaintifs.—Les facultès intellectuelles se manifestant par les répouses de oui ou non, sans le désir, ni la volonté d'émettre beaucoup de paroles.—Ces malades se soutenant avec peine pour l'emploi des remèdes. Une sueur grasse; la mort sans convulsion, ou agitation, surtout dans les momens où on voulait les remuer."

"After adverting to its progress in the Circars, the letter thus proceeds: 'The disease to which we allude, has not been confined to the country near Ganjam. It afterwards found its way to this place (Calcutta); and after chiefly affecting the native inhabitants, so as to occasion a great mortality during the period of a fortnight, it is now generally abated, and pursuing its course to the northward.' It would have been interesting to have traced this disease, as it seemed to have put on the epidemical form, but every attempt to discover its further progress has proved fruitless."

Noticed by Curtis, in 1782.

From this period, up to the year 1787, and perhaps even to 1790, the cholera would appear to have existed epidemically, in various parts of India. Curtis states, that the fleet, in which he served, joined Sir Edward Hughes's squadron at Madras, in the beginning of 1782; in May of that year, his ship, the Seahorse arrived at Trincomallee, and he says, "The mort de chien, or cramp, I was also informed by the attending Surgeon had been very frequent and fatal among the seamen, both at the hospital, and in some of the ships, particularly in the Hero and Superb." The Seahorse had no case of the disease till the 21st of June, when between that day and the 25th, they had eight cases.

"In every one of the eight cases, the symptoms were so much alike, both in order and degree, that a description of any one would answer almost equally well for every other. Any difference that took place was in the suddenness of the attack, or the rapidity with which the symptoms succeeded each other. In all of them the disease began with a watery purging, attended with some tenesmus, but with little or no griping. This always came on some time in the night, or early towards morning, and continued some hours, before any spasms were felt; and slight affections of this kind being very common in the country, the patients seldom mentioned them till they began to be more severe, and extended to the legs or thighs. This purging soon brought on great weakness, coldness of the extremities, and a remarkable paleness, sinking and lividity of the whole countenance. Some at this period had some nausea, and retching to vomit, but brought up nothing bilious. In a short time the spasms began to affect the muscles of the thighs, abdomen, and thorax, and lastly they passed to those of the arms, hands and fingers; but I never saw, then or afterwards, those of the neck, face or back at all affected. The rapidity with which these spasms succeeded the first attack, and their severity, especially as affecting the muscles of the thorax and abdomen, denoted in general the degree of danger in the case. The affection is not, as in *tetanus*, confined to a single muscle, or to a certain class of muscles only. Neither does it, as in the spasmus clonicus, move and agitate the members. It is a fixed cramp in the belly of the muscles, which is gathered up into a hard knot, with excruciating pain. In a minute or two this relaxes, is again renewed, or the affection passes to others, leaving the miserable sufferer, hardly an interval of ease; and, lastly, it passes from one set to another; from those of the inferior extremity to those on the upper parts, leaving the former free. The patients complain much of the pain of these cramps; think they obtain some relief from friction of the parts, and cry to their companions to rub them hard. As the disease proceeded, the countenance became more and more pale, wan and dejected; the eyes became sunk, hollow, and surrounded with a livid circle. The pulse became more feeble, and sometimes sank so much, as not to be felt at the wrist, in two or three hours after the spasms came on. But so long as it could be felt, it was but little altered in frequency. If the spasms happened to intermit, it would sometimes rise a little, and the countenance assume a better look. The tongue was generally white, and more or less furred towards the root; the patients had all great thirst, or rather a strong desire for cold drinks; but there was no headache, or affection of the sensorium commune throughout."

" The coldness of the extremities, which was perceptible from the very first, continued to increase, and spread over the whole body, but with no *moisture* in the skin, till the severity of the pain and spasms forced out a clammy sweat, which soon became profuse. The hands now began to put on a striking and peculiar appearance. The nails of the fingers became livid, and bent inwards; the skin of the palms became white, bleached, and wrinkled up into folds, as if long soaked in cold water; the effect, no doubt, of the profuse cold sweat, which is one of the most pernicious and fatal symptoms of the disease, both form the effect it has in such a climate, of exhausting the strength, and in abstracting heat from the system. In some of the present cases, and in many others after this, we had recoveries from the severest degrees of spasmodic affection; even where the pulse had been for hours completely lost at the wrist, and the body perfectly cold; but never of any who had these profuse cold clammy sweats, and where the hands had put on this appearance."

" All this while the purging continued frequent, and exhibited nothing but a thin watery matter or mucus. In many, the stomach became at last so irritable, that nothing could be got to rest upon it; but every thing that was drank, was spouted out immediately; without straining or retching. The countenance and extremities became livid, the pulsations of the heart more quick, frequent and feeble; the breathing, began to become laborious and panting; and, in fine, the whole powers of life fell under such a great and speedy collapse, as to be soon beyond the power of recovery. In this progression, the patient remained from three to five or six hours from the accession of the spasms; seldom longer. These began at last to abate, but with more internal oppression, great jactation, panting and gasping for breath, from the diminished action of the respiratory organs: for there were no marks of oppression or effusion on the lungs; and the motion of the heart, so long as it could be felt, became more and more quick and irregular, till death came at last to the relief of the miserable sufferer." Sometime before that event took place, the spasms gradually abating, left the sufferers entirely, and so much possession of their faculties did they retain, that they would continue to talk sensibly to their messmates, to the last moment of their life, even when the whole body had become perfectly cold, and all pulsation of the heart had ceased for a long time to be distinguishable."

" About the middle of July 1782, I entered on duty at Madras Hospital. Here again, I had occasion to see many more cases of the mort de chien. It was frequent in the fleet in the month of August, and beginning of September, the season at which the land wind prevails on this part of the coast. We had some cases in the hospital in the end of October, and in November after the monsoon, but few in comparison."

Also by Girdleston.

Although cholera would thus appear to have been of limited prevalence in the Naval Hospital at Madras, in October 1782, its influence was most severely felt at that period by the newly arrived troops from England, as stated by Girdleston in his Essay on Spasmodic affections of India.—He observes, " spasms were the first disease which appeared amongst the troops who arrived at Madras in October 1782, under the command of Major General Sir John Burgoyne. More than fifty of these fresh men were killed by them within the first three days after they were landed in that country, and in less than a month from that time, upwards of a thousand had suffered from attacks of this complaint."

"The symptoms which commonly first presented themselves were coldness of the surface of the body, especially of the hands, feebleness of the pulse, and spasmodic contractions of the lower extremities, soon extending to the muscles of the abdomen, diaphragm, and ribs. As the spasms advanced, the muscles might be seen to assume the rigidity of cartilages; sometimes causing the body to remain immovably extended, sometimes bending the trunk through its whole length, anteriorly; and sometimes though seldomer, backwards. The parts in which the spasms began generally remained rigid; but those which were subsequently seized with them, had momentary intermissions of the contractions; the only intervals of relief experienced by the patient from the most tormenting pains. The hands and feet then generally became sodden, with cold sweat, the nails livid, the pulse more feeble and frequent, and the breath so condensed as to be both seen and felt, issuing in a cold stream at a considerable distance. The thirst was insatiable, the tongue whitish, but never dry; vomitings became almost incessant; the spasms, cold sweats, and thirst, increased with the vomitings; which last if not checked soon terminated the existence of the patient." "In this manner, most commonly was the succession of phœnomena; but often they were so rapid in their attack, that they seemed to seize the patient all in conjunction instantaneously."

"In some few, the extremities remained warm; in others also the spasms were only clonic or convulsive. Some died in the first hour of the attack; others lived a day or two with remissions; when they died, either of universal spasms or an apoplexy. On dissection of the bodies after death, it appeared that no injury had been sustained by the brain, liver, gall-bladder, stomach or heart. The prognosis of this disease is formed with greater certainty from the warmth or coldness of the extremities, than from either the universality of the spasms, or the frequency or steadiness of the pulse. Thus if the spasms were ever so general, with warmth of the extremities, there was no immediate danger: on the contrary if the spasms were ever so trifling, with coldness, there was every danger to be feared."

Girdleston, like Bontius, treats of the "Spasms" as an idiopathic disease; yet it is obvious from his observations on the prognosis, that spasms was merely a symptom, and one of secondary importance. He has not noticed purging, and from the casual way in which vomiting is mentioned, it seems doubtful whether we are to consider purging to have been inadvertently omitted, or that it was really not present, as has been often observed to be the case on late occasions. It is accordingly assumed, that the "spasm," described by Girdleston, was in fact the spasmodic cholera, or mort de chein of Curtis

It is also noticed in the Bengal Report, that in the month of April 1783, cholera destroyed above 20,000 people, assembled on occasion of a festival at Hurdwar; but it is said not to have extended to the neighbouring country. All these authorities would seem accordingly to establish the fact of the prevalence of cholera in India; and especially of its existence during the period extending from 1769-70 to 1787, when we find the first notice of the disease in the records of this Office as given in the extracts, page 239, and which we now come to consider.

Dr. Duffin's account of it, at Vellore, in 1787.

Dr. Duffin, in a letter dated the 28th October 1787 says, "I returned yesterday from Arcot, where I had an opportunity of seeing the situation of the sick. The cholera morbus rages with great violence, with every symptom of putrescency, and so rapid in its progress, that many of the men are carried off in twelve hours illness." Dr. Duffin considered the disease to depend on putrid bile; he recommended castor oil, external heat, frictions, and the internal exhibition of warm cordial drinks, as the plan of treatment he had always found successful. In a subsequent letter dated the 3d November he enters more fully on the nature of the disease. "The symptoms were generally pretty much the same in all I have seen, only the violence of the spasms were greater according to the stamina of the patient, and the quantity of putrid matter in the primæ viæ. They generally are seized with a nausea, frequent heats, and chills, a dryness of the skin, and numbness and uncommon sensation as they express it, in different parts of their body. Then came on cold sweats, severe gripings, and mostly a purging of bilious colluvies, appearing often in a ferment like yeast, and not unlike it in colour, with a putrid offensive smell, retchings to vomit, often bilious, and at other times scarce any thing is brought up, but the liquor that is drank; an intense thirst, oppression on the præcordia, with difficulty of breathing, frequently the spasms begin with the first attack, though sometimes they only appear as the disease advances, and then generally affect the lower extremities, afterwards the abdominal muscles; and the whole system becomes convulsed. The pulse from the first sinks, and at times is scarce to be felt; profuse clammy cold sweats, and a pallid hue overspread the body; the countenance ghastly, the eyes sunk, and the voice scarcely to be heard, with great dejection. The tongue in general moist, till near the close of the disease, when it becomes dry and foul, and the breath offensive; the urine generally pale, and in small quantity."

It is to be observed, that Dr. Duffin, at the period in question, was stationed at Vellore, about 14 miles from Arcot; and that his description of the cholera could not be founded on any lengthened observation of the cases at the latter station, since he only made a very short visit to it. There seems some reason to doubt therefore, whether he was not describing partly what he saw at Arcot, and partly what he had more experience of at Vellore, where the cholera was then also raging, but not in a very dangerous degree. His confident allusion to the bilious nature of the contents of the primæ viæ, and the success of castor oil in curing the disease, may lead us to suppose that at Vellore, he had in fact to contend chiefly with the cholera morbus as it is commonly termed, not with the epidemic or spasmodic cholera. This conclusion is supported by a reference to the sick returns, which happen in this instance to be somewhat less meagre and imperfect than they generally are found to be at that distant period.

It appears, that during the month of October 1787, twenty-two Europeans were admitted into hospital with "cholera morbus" at Vellore, and two Natives; of whom it cannot be ascertained that any died, for the returns of that period do not shew the disease from which the casualties arose; however, only two Europeans died during that month at Vellore, from any disease, and not one Native. At Arcot, on the contrary, 25 Europeans are entered in the sick returns, under the head of "cholera morbus" in October 1787, but no Natives: and 25 Europeans died that month, a number which falls short of what Dr. Davis distinctly attributes to cholera alone. In November, 45 Europeans are returned at Vellore, under the head of "cholera morbus," and 1 Native; only one European died that month at Vellore. At Arcot, 17 Europeans are returned in November, as ill with "cholera morbus;" only one death took place in all, but during this month it seems to have slightly affected the Natives, 12 being returned, of whom none died: there were at this time four Regiments of Native Cavalry quartered there. It seems reasonable therefore to infer, that the disease prevalent at Arcot and described by Mr. Davis as "a spasmodic affection of the nervous system," was not the same, in general, with that which existed at Vellore, unless we impute a degree of efficacy to castor oil which can hardly be admitted.

Dr. Davis's account of it at Arcot in 1787.

Mr. Davis, a member of the then Hospital Board, appears to have been deputed from Madras, to investigate the nature of the sickness which prevailed at Arcot. In his report to the Board, which is dated the 29th November 1787, he states as follows. "I found in what was called the epidemic hospital, three different diseases, viz. patients labouring under the cholera morbus, an inflammatory fever, with universal cramps; and a spasmodic affection of the nervous system distinct from the cholera morbus. I understood from the regimental Surgeon, *that the last disease had proved fatal to all who had been attacked with it;* and that he had already lost seven and twenty men of the regiment in a few days. Five patients were then shewn me, with scarce any circulation whatever to be discovered; their eyes much sunk within their orbits; their jaws apparently set, their bodies universally cold, except at the præcordia, and their extremities livid. Mr. Pringle observed that these five men were attacked on the 26th October, that Mr. Duffin had seen them, and had recommended castor oil to be administered, &c. &c."

He then goes on to say, " finding on the day of their attack, the rectum had discharged its contents in the action of straining to vomit without being able to bring any thing up, I directed a stimulant injection to each of these patients, which produced a copious discharge of fæces, without any bilious induration (indication?) whatever." Having prescribed some antispasmodic medicines, he says, " from all which, I had the pleasure to observe, that in four and twenty hours after my first visit, the spasms had totally subsided, the patient's voice, which all along had been so low as scarce to be heard, was returned almost to its natural state; the pulse that was imperceptible, full and even." After ordering some carminative purgatives he observes, " I attended to the operation of these respective medicines and could discover no bilious indication in the whole system."

Two of the five patients having died in a few minutes after being taken out of a hot medicated bath, " upon dissection the duodenum was found distended with putrid air; the other intestines empty except the colon, and rectum, in which latter there were indurated fæces; the whole viscera sound, the gall bladder turgid, but not diseased."!

Mr. Davis does not state the symptoms of the " inflammatory fever with violent cramps," farther than that the patient complained of a " tightness of the abdomen with a costive habit." The " cholera morbus" was distinguished by " spasms of the præcordia, and cramps of the extremities with bilious lientery, and a copious discharge from the stomach of a green, yellow and dark, coloured bile." During his residence at Arcot, upwards of sixty patients labouring under these three forms of disease were admitted, and only two or three deaths ensued. The dissection of a case is given, where, it is stated, " the bladder was most singularly contracted, and did not exceed in size a large nutmeg, yet without inflammation, or any apparent disease, except its contracted state."

Mr. Thompsons account of it, at Arcot and Trincomallee.

Mr. Thompson, Surgeon, who was also sent to Arcot at the same time with Mr. Davis, observes, " This disease is exactly the same as prevailed at Trincomallee in the months of April and May 1782 when the season was very hot, and chill, the winds blowing from the land, and reaching some leagues to sea. The weather here at present is the same as I experienced at Trincomallee." Mr. Thompson also gives an account of a dissection where, " the gall-bladder was exceedingly distended with bile, so much so as to appear protruded some inches below the liver, and to contain near six ounces of bile. No marks of putrescence in any of the abdominal viscera. The urinary bladder quite empty and contracted to the size of a walnut; the stomach and duodenum both empty of bile, and no appearance of inflammation in any part of the intestinal canal or peritonium."

To persons familiar with the progress of cholera during late years, there can be little difficulty in understanding and reconciling the apparent discordances in the accounts just quoted. Many instances of the common cholera would seem to have occurred at Arcot, as well as at Vellore, where, it has been conjectured, this form of the disease chiefly prevailed. Some cases seem to have commenced with a degree of febrile excitement, an occurrence which has been occasionally observed in the present epidemic; or perhaps, these cases might be properly referred to a species of febrile affection with cramps, of which we have a very distinct history by Mr. Anderson, who observed the disease at Ellore in 1794, and styled it a " Causus;" lastly, that which Mr. Davis characterises as a " spasmodic affection of the nervous system distinct from cholera morbus," was no doubt the same low and dangerous form of the disease with which we have become too well acquainted in recent times.

The disease would seem to have lost its force at the period when Mr. Davis arrived at Arcot; for we find, that the five cases, of the low form, which he first saw, had lingered from the 26th, to the 29th; and few of the subsequent seizures proved fatal, which is quite analogous with our present experience.—Whether the bowels were less generally affected in that epidemic, or whether the means employed, and the prolongation of life for three days had given rise, in the cases in question, to fæcal formations, and to their accumulation in the large intestines, it is not easy, from the scantiness of our information, to decide. But, if any doubt could be entertained of the cases described, being cholera, such as we have lately witnessed, the testimony of Mr. Thompson to their identity is conclusive, if we admit that the Mort de Chien of Curtis, which he states to have prevailed at Trincomallee at the time mentioned by Mr. Thompson, was really cholera.

Cholera noticed in 1790 in the Northern Circars.

It is stated in the Calcutta report, that "Cholera was again very prevalent and destructive in a Detachment of Bengal troops marching through the Northern Circars, in the months of March, April, May and June of 1790. "The disorder was characterised by precisely the same symptoms which marked the late epidemic. It began with violent pain and spasm in the stomach and bowels; which were followed by purging, vomiting, and all the signs of extreme debility."

Noticed by Dr. James Johnston.

The next account we have of cholera is to be found in Dr. Johnston's work on the diseases of Tropical Climates. It does not appear in that work, that cholera was then epidemical, but it would seem to have occurred pretty frequently, both on shore, and on ship board, chiefly in the vicinity of Trincomallee. The precise date is not mentioned; it is concluded, however, to have been about 1804. Dr. Johnston does not detail the symptoms with much minuteness, contenting himself with those occurring in one or two cases, and referring generally to Curtis's description of the disease, a pretty satisfactory proof that they were the same. A seaman on awaking after a debauch, repaired to the deck, and there again fell asleep, during the chilly part of the night. "About 4 o'clock in the morning, he awoke with a shiver and left the deck, but was soon seized with frequent purging and griping, his stools consisting of mucus and slime. Nausea and retching succeeded; nothing being ejected but phlegm, and the contents of the stomach. His pulse was now small, quick, and contracted; his skin dry, but not hot. About 8 o'clock in the morning he began to feel spasms in different parts of his body, which soon attacked the abdominal muscles, and threw him into great pain. During these paroxysms, a cold clammy sweat would be occasionally forced out, especially in the face and breast. The extremities now became cold; his features shrunk; the stomach rejecting every thing, which was offered, either as medicine or drink. The abdomen and epigastrium all this time were distended and tense, with incessant watery purging and painful tenesmus. By ten o'clock his pulse could scarcely be felt: his breathing was oppressed and laborious, his eyes sunk, and the whole countenance singularly expressive of internal agony and distress. The extremities were cold, shrivelled, and covered with clammy sweats. The violence of the spasms now began to relax; and by eleven o'clock, or seven hours from the attack, death released him from his sufferings." "This may serve as a specimen of the worst form of that dreadful disease, which has obtained the appellation of "mort de chien," or the "death of a dog."

Cholera supposed to have been met with at various times since 1787.

Since cholera has become familiar to the older practitioners here, many, perhaps all of them, recollect having met with insulated cases of that disease, as well as of sudden, and often fatal illness, which they, at the moment, could not well understand, and which consequently, proved extremely embarrassing. Such cases would no doubt be attributed by different practitioners to different causes, and be referred to different heads of disease according to the various states in which the patients were seen; and, perhaps some of them were considered to be merely anomalous instances of common cholera; but late experience has now very generally led to the opinion, that they were in fact cases of spasmodic cholera. The records of the Medical Board throw no light on this subject. The number of cases of the description alluded to, which may have entered the military hospitals, could not however, in all probability, have been great, without attracting observation. It might perhaps be thought that the necessity of classing the cases in the official returns would have led to their being detected by a bare inspection of these documents; but in the absence of any nosological arrangement, which then distinguished the returns, no difficulty would be experienced in disposing of them.

Sporadic cases of spasmodic cholera might naturally produce the impression that some poisonous matter had been swallowed, which other circumstances would contribute to render sufficiently plausible; for, it is notorious, that intoxicating liquors are prepared by the natives, and clandestinely sold to the European soldiery, which contain the most deleterious matters, and which often produce fatal consequences to those who drink them. The symptoms attending such cases are frequently very anomalous and perplexing. Although the natives, are less prone to debauch in spiritous liquors, they are yet not altogether to be exempted from the reproach; and the notion of a poison having been swallowed, would in their case be rendered still more probable, from such occurrences being not unknown amongst them, and from our ignorance of the nature of the poisons which are used.

Described by Mr. J. Wyllie in 1814.

It must be admitted however, that very few cases either of sudden death, or poisoning, or cholera, are to be found in the returns; but it will be presently shewn that no positive conclusion can thence be drawn against the existence of spasmodic cholera prior to the year 1818, when it appeared epidemically in these territories; and, that some at least of the cases designated as cholera in former times, were clearly of the spasmodic species. Mr. John Wyllie in his report dated 20th July 1818, (page 68) makes the following remarks. " Before concluding, I think it proper to add, that although I have never, before the late occasion, seen this peculiar disease prevailing as an epidemic, yet I have at various times met with single cases of it in the most aggravated form, and I am much mistaken, if I have not recorded two particular instances of it in my journal of the 1st Battalion 24th Regiment for the month of June 1814, under the names of Paramuttee, and Madaramooto, Sepoys." On referring to these cases, which have been preserved, Mr. Wyllie's conjecture seems to be fully confirmed: The first case is thus described. " Jaulnah, 19th June 1814, P. M ½ past 2. He is in a state of the most extreme exhaustion, unable to move or speak, features contracted; eyes sunk, half open, and of a dull lustre; countenance bedewed with a cold sweat; pulse low, skin cold. Has been vomiting and purging very frequently since 7 A. M. and had all yesterday been affected by a watery diarrhea;" at 3 P. M. he " is greatly distressed by excruciating crampy pains of the thighs and legs;" at 9 P M. " complains of thirst, tongue moist;" on the 20th he " continues very low; countenance still of a ghastly appearance;" " alvine discharge copious, alone of ash coloured slime." The patient recovered. The next case is on the 24th June, 7 A. M, " Is in great distress from violent crampy pains of the muscles of the upper and lower extremities, but more particularly of the fingers; there is great prostration of strength; countenance ghastly; surface cold; pulse gone, much thirst. He had a very copious watery purging on him since 1 o'clock this morning. He attributes his complaints to having slept last night on the damp ground, and in the open air while on guard;" at 9 A. M. " pulse just perceptible;" at 2 P. M. " slight giddiness, eyes red, says he has much appetite;" at 6 P. M. " one copious pale watery evacuation." This man also recovered, and both were treated with opium, and diffusible stimuli.

Also by Mr. Cruickshanks in 1814.

Another incidental notice of cholera, has led to the discovery of that disease having prevailed to a remarkable extent, at the same time, and much in the same neighbourhood, as in the preceding instance. The late Mr. J J. Duncan, in a report dated 1st September 1819, after making some observations on the comparative advantages of dry and moist heat, externally applied, goes on to say,

" In the month of June 1814 when the cholera appeared with great severity in the 1st Bat. 9th Regt. N. I. on its march from Jaulnah to Trichinopoly, I employed exactly the same plan of exciting heat, (heated sand), and found the greatest benefit resulting from it." " The disease in the 9th Regiment in 1814 resembled in every particular, (with the exception of the heat at the præcordia), the cholera at present so common, although it could not be called epidemic. The best behaved, the most robust, and the most active, were attacked and suffered equally as much as any patient I have seen with the epidemic cholera ; out of a very considerable number of patients I only lost one man ; the number I could not specify as I was ordered back to Jaulnah on duty about ten days after the appearance of the disease, and before the monthly returns were dispatched."

On referring to the returns of that corps it appeared, that in the month of June 1814 ninety nine cases of " bowel complaint," were entered, of which fourteen proved fatal ; and about sixty cases of the same disease were admitted in the succeeding two months of which however, very few died. As these returns made no allusion to cholera, and as they were signed by Mr. Cruickshanks, a reference was made to him for information respecting the preceding observations of Mr. Duncan, which has drawn forth the very valuable report, inserted at page 234 and bearing date the 17th June 1823. It now appears, that a brigade of two Battalions of N. I. marched from Jaulnah on the 29th May 1814, and that about the 10th or 11th of June a disease broke out in one of the Corps, which, there can be no doubt, was the spasmodic cholera. " When taken into hospital," Mr. Cruickshanks observes of the first cases he saw, " they exhibited all those symptoms now so well known, of persons labouring under the advanced and fatal stage of epidemic cholera ; the skin cold, and covered with cold perspirations ; the extremities shrivelled, cold, and damp ; the eyes sunk, fixed, and glassy, and the pulse not to be felt. These persons all died, and I find, on referring to such notes as I have preserved, that influenced by consideration of the vascular collapse, and total absence of arterial pulsation, I had denominated the disease asphyxia. Many sepoys were brought into hospital in circumstances approaching to those above detailed. Of them, in a considerable proportion, the disease terminated fatally. Thus the cases which I first saw of this malady, in the aged among the camp followers, differed in no respect from the worst cases of that affection since so well known under the name of spasmodic cholera. That name however I did not adopt, neither in my public reports, nor in the private notes which I took at the time. In this I was chiefly influenced from considering the nature of the matter ejected by vomiting and by stool which in cholera is said to consist of bile, but which in these cases was aqueous, or mucilaginous. Besides it was evident that the diluent treatment, recommended in cholera, could never be applicable to such a disease as that with which I had to contend. I continued therefore to employ in my reports, the term " bowel complaint," both because, I found it in the hospital books on joining the corps, and because if it conveyed no very precise idea of the malady which it was meant to designate, it was at least an appellation whence no erroneous impressions could be derived."

This paper by Mr. Cruickshank is of great importance, in as much as it evinces that cholera did exist to an extent not hitherto suspected to have occurred at so recent a date ; and also, that even under these circumstances, no trace of it is found in the public records, for unless we had been guided by the incidental remark of Mr. Duncan, made five years after the occurrence, and had most fortunately been able to refer to Mr. Cruickshanks, the medical returns of the corps never could have led to a knowledge of it. Hence, as already observed, though cholera very rarely appears in the sick returns of former times, it is by no means to be thence inferred that it did not then exist.

But this paper is also peculiarly valuable, as shewing that the cholera assumed, on that occasion, one of those singular and unaccountable features which it has frequently manifested in the present times ; for, after enumerating various striking atmospherical vicissitudes, change of food, and many other predisposing, remote, and exciting causes of disease, to which the Brigade had been exposed, Mr. Cruickshank goes on to observe, " To none of these causes of disease which I have enumerated, did the natives themselves attribute the sickness and mortality which prevailed ; and on considering that of two Battalions composing the Brigade, alike exposed to all those causes, *one only* suffered from the epidemic, *the hospital of the* 5*th N. I. exhibiting not a single case of analogous disease,* those adduced can only be regarded in the light of remote, or predisposing causes ; while, something or other acting exclusively on one Battalion must be sought for as instrumental in exciting the malady." We shall have occasion hereafter to revert to this particular subject ; at present it is mentioned as shewing that cholera did, even then, manifest one of the most curious of its features, namely, that, of two bodies of men, apparently under similar circumstances, one shall be attacked by it, and the other shall escape.

Mr. Hay considers it to be endemic in Travancore.

It would also seem, by the subjoined extracts of reports from Mr. Staff Surgeon Hay, that cholera, in a form nowise different from the spasmodic or epidemic, is endemial in the Travancore country, and that he regarded the disease which appeared there in October 1818, to be this endemic, rather than the epidemic, whose approach from the northward he still contemplated. On the 19th November 1818, Mr. Hay writes ; " the spasmodic cholera I am happy to say abates ; the last seven days not having afforded more than thirty six cases at Quilon, and there has been no casualty here in that time ; but the Vythians who arrive from the country for instruction, and medicines, report the deaths of almost all attacked." After acknowledging the receipt of some medical supplies he continues, " I trust to be able to make a noble stand against the *epidemic* when it arrives ; what I have had to encounter recently I hold to be the *endemic* Veshoo-ugeka, or Neer-comben, if not of the Malabars, certainly of the Travancorians, which is perfectly familiar to all here ; committing frequently great mischief, and sometimes (25 years since) desolating the country. Then, thousands are said to have died of it ; the Vythians fled from it as a plague, and no one, who has not early succour from suitable medicines, is ever known to recover ;" " the description of the Veshoo-ugeka tallies in every particular with that of the spasmodic cholera ; and whether the epidemic reaches us or not, the country will have reason to be thankful for instruction and remedies they never might have had, unless the dangerous inroad of the epidemic had been apprehended In May last at Trevanderan, the capital, one hundred lives were sacrificed to this Veshoo-ugeka (poisonous air) ; some of the servants of the palace were seen by Mr. Provan's Assistants, and saved, but the villagers around, having no assistance, died to a man." Again, on the 24th December 1818 Mr Hay writes ; " The Neer-comben, which signifies gush of water by stool, the effect of the disease, and its synonime Veshoo-ugeka or poisonous air, its imputed cause, which are the vulgar, and scientific designations of our present spasmodic cholera, has been very prevalent amongst the troops, their families, and followers. In Quilon I have treated upwards of 120 under the spasmodic cholera, and of the inhabitants, a considerably greater number, with complete success in every case, where application was made within six hours ; and hundreds have been saved by the use of the remedies I have distributed throughout the country. This shews unusually, for be it remembered that to the central parts of the Travancore coast, and parts *quite* adjacent, so far as my reports inform me, the *endemic* has been principally confined, and it is of this I speak ; but the *epidemic* also now rapidly progresses southward, having already at Cochin yielded Mr. Mather some hundreds of patients, and at Aleppy about 30 per diem are taken ill ; as it nears us, I become more apprehensive that the mortality will be great, for although medicines, with ample instructions, have been distributed to 140 Vythians and others in the country, yet from the experience I daily have of their general inattention I much fear that when the day of visitation and trial arrives, the sick will be found too often left to their fate, altogether unassisted " Mr. Hay goes on to state that in some villages where there was no medical aid, from three or four, to ten people were dying daily of the *endemic* ; and, talking of the zeal of the Vythians, he observes, " but when the same malady (spasmodic cholera) was *epidemic* here 34 years since, they ran from their charge under the persuasion that the disease was contagious, for many died, and numbers in one family."

There can be no doubt, however, that the disease described here as an endemic was, in fact, the epidemic cholera of other parts; and no particular manifestation of it took place afterwards at Quilon in regular course from Cochin, and Allepy, as seemed to have been expected by the Staff Surgeon, nor indeed, until July and August following. The progress of cholera as an epidemic along the western coast however, was much less regular than in other tracts, which may perhaps be attributed partly to the geographical peculiarities of that coast, and partly to the disease being in some degree endemic, which would not only accelerate the invasion and march of an epidemic of the same nature, but also render it difficult to fix the precise dates of its appearance. Mr. Hay mentions in the first letter, that cholera committed great ravages in the Travancore country "25 years since," and in the 2d letter that "it was epidemic 34 years since;" either of these dates supposing that there was only one visitation meant, would prove the existence of cholera, epidemically, at a period considerably ulterior to 1787 and of course anterior to the instance in the 1st Battalion 9th Regiment; and the whole communication shews that the disease is at no time of rare occurrence in that country. There is a very fatal form of disease also known in Travancore, called "the red eye sickness" by the natives, which is evidently a modification of cholera. Mr. Superintending Surgeon Duncan, (page 110,) also observes, "I find the old inhabitants of Bellary are acquainted with this disease, and inform me that it raged here about 30 years ago with great violence. This was succeeded by a famine for want of inhabitants to cultivate the country."

Epidemic attack of cholera in Travancore, about 1790,

and in the Ceded Districts about the same time.

It would have been highly important and satisfactory, could we have ascertained with precision, by a reference to regular returns of sick, to what degree cholera may have prevailed in the army, during those periods, when, according to the authorities already quoted, it appears to have been raging on the Coast; but the records in the Medical Board Office do not reach farther back than 1786, at which time, an "Hospital Board" was first constituted. The returns of sick from that period to the year 1802, which however are not in any regular series, and those from 1802 to 1815, have been consulted, and it appears, that in 1787, 88 and 89 cholera was prevalent at Arcot and Vellore. After 1789 few cases occurred; but there is still a considerable fluctuation in the numbers, from year to year, as will be seen in the subjoined note.*

Notice of cholera in the Returns, from 1787 to 1814.

A cursory inspection of the register of burials which has been kept at St. Mary's Church in Fort St. George, from so remote a period as the year 1680, affords some grounds for believing that the population of Madras, including the military and seafaring classes, have, at certain periods, suffered much from epidemics; no light however is thrown on the nature of the sickness, which may have prevailed. Thus, in 1685, the number of funerals was 31, which is about the average of the four previous years; in 1686 there were 57 funerals; in 1687, 93; in 1688, 84; in 1689, 75; after which, they gradually diminished to about the former standard. The funerals amounted again to more than the usual number in 1711, being at 92; in 1712, 89; and 1714, 80; in 1755 there appeared to have been much sickness, 101 funerals having then taken place; the numbers increased yearly till 1760, when there were 140. After this, they decreased, and continued stationary till 1769, when 148 took place, a great many of which were of seamen, soldiers, and recruits. A most remarkable increase in the mortality is observable, at a period when, we know, cholera prevailed on the coast. Thus, from the year 1770, to 1777, the average number of funerals was about 105 in the year, the

Cholera inferred to have prevailed epidemically, at times, from 1680 to 1784.

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* 1787....130	1792.... 0	1797.... 0	1802.... 8	1807.... 79	1812....40
1788.... 54	1793....13	1798.... 1	1803....45	1808.... 60	1813....45
1789.... 34	1794.... 3	1799.... 0	1804....53	1809.... 57	1814....65
1790.... 9	1795.... 1	1800.... 2	1805....16	1810....133	
1791.... 7	1796.... 6	1801....25	1806....55	1811.... 67	

In 1815, see Tables in the appendix.

population having by this time increased, it is to be supposed. From that period till 1785, the funerals were as follows:

1778.....165	1781....516	1784.....250
1779....190	1782....657	1785.... 99
1780....353	1783....440	

The occasional presence of fleets and armies no doubt contributed to swell the lists of funerals at particular periods; but on the occasions in question, the mortality extended also to the civil population; and, as the instance of the greatest mortality which is recorded, took place at a time, when, we know from other sources, cholera prevailed on the Coast, there seems ground for inferring that the same cause probably existed on the other occasions which have been noticed. Though not immediately connected with the subject, we may here be permitted to remark, that the examination of the obituary affords signal proof of an amelioration in the health of seafaring people, the mortality, amongst them, in remote periods, appearing to have been excessive, in comparison with that of modern times.

Having, in the preceding desultory remarks, attempted to trace the existence of cholera in India from a very remote period, down to that of its epidemic appearance in 1817, sometimes coming as a pestilence upon the land, at others visiting only particular tracts; and having also attempted to shew grounds for inferring, that we are not acquainted with all the instances of its epidemic visitations, nor by any means aware of the extent of its occasional or sporadic appearances, it only remains to refer the reader to the valuable reports of the Bengal and Bombay Boards, for information respecting its late march through the respective territories of those presidencies; to Mr. Orton's separate work, for many interesting particulars of its appearance here; and to the narrative at the first page of this report, for an account of its progress through the Madras territories. This narrative has been compiled from official reports; and, as it is intended to exhibit the history of the disease, as a sort of memoir to the map which is prefixed, it has been as much as possible divested of all medical reasoning. It is not intended to enter into any discussion respecting the forms of cholera, or the diseases supposed to have been cholera, which may be thought to be described by European writers of ancient, and modern times, as having prevailed in Europe.

Nosological remarks. Cholera has generally been classed by Nosologists under the head of Fluxus; but Cullen, though retaining the name, which he understands to signify "a flux of bile," and defining the disease to be so, or of "a bilious humour," places it in his class, Neuroses, and constitutes it a genus of the order, Spasmi. Dr. Good, in his late valuable work, the study of medicine, retains the generic term Cholera, which he justifies on the ground that the "bile is morbidly affected in its secretion, either in quantity, or quality;" and he places it in the class Cæliaca, or diseases of the digestive function, and in the order Enterica, or diseases affecting the alimentary canal.

Names given to Cholera by the Hindoos. The quotations which have been given from Hindoo writings, shew, that cholera, or at least, two diseases resembling it, are also there classed, either under the head of nervous diseases, or of disorders of the digestive organs. The native practitioners know the disease by the name of Vishuchi; or Vishuchiki; but the people in general designate it only by two words, signifying in their respective languages, *vomiting and purging*. The term "Neer comben," mentioned by Mr. Hay as being in use with the natives of Travancore to express the disease, does not appear to be known to the natives of the Coromandel coast. The word

Mordixim. Mordixim, mentioned by several modern authorities, is incidentally introduced by Bontius in his description of the Hog stone, who says, that "it (the Hog stone) is infused in wine for the *Cholera* which the Islanders, (Malays) call Mordexi." Sonnerat has been accused of translating, or transforming this word into Mort de Chien; but, independently of there being no such phrase in the French language, it is manifest, from the quotations already given, that Mort de Chien was in current use among our soldiers and sailors at the time Sonnerat wrote his book: he does not apply it indeed to cholera, but to an indigestion or cholic, in which sense it is in current use with the Portuguese at this day. A learned critique is given in the Bombay reports, on the origin of the term Mordexim, which is there derived from the Sanscrit. If this be true, the corruption of the Sanscrit would seem to be of Portuguese origin, and the word being spelt with an x, pronounced in that language as *sh*, and the final m pronounced as the French *in*, we have the word Mordeshiin or *Mordeskeeng*, whence our English corruption, Mort de Chien, for, as already observed, it is not a French phrase. In Vieyra's Portuguese Dictionary, we find the following words. "Mordexim (among the Indians) a sort of colic." "Mordixim—a sort of sea fish," and in Chambers's Dictionary of Arts and Sciences, there is, "Mordixym, or Mordoxi—a name given to a disease very frequent among the inhabitants of Goa, which consists in a nausea, and continued vomiting; it usually seizes the patients suddenly, and unexpectedly, and often proves fatal." The word, however originally derived, is now incorporated with the Portuguese language, and is used to signify a severe colic. Is it allowable to infer that the Malays, and other inhabitants of the Eastern Isles, adopted it from the Portuguese during their sway in that part of the world?

Generic Name.

The generic term, cholera, being consecrated by universal, and almost immemorial use, it would not, perhaps, be proper to reject it, even could we propose another, demonstrably better; or prove satisfactorily, that bile, either in its quantity, or quality, has no connection whatever with the cause of the disease; but the specific terms may admit of some observations. We have had no other method in this country, of distinguishing between the two forms of the disease, than by retaining the old, and, according to Dr. Good, the pleonastic appellation of *Cholera Morbus*, signifying that form wherein bile appears early, or from the first in the discharges from the alimentary canal, and in which the circulation is not remarkably depressed; and by applying the adjuncts *spasmodica*, or *epidemica* to the second; or that form wherein bile, in common with the other glandular secretions, disappears, and where the pulse sinks, or ceases to be felt. Dr. Good has another species, styled Cholera Flatulenta, which, however, it is not necessary to notice here.

Specific names.

The adoption of Dr. Good's specific term, cholera biliosa, instead of cholera morbus, will obviate difficulty and confusion; for bile is one of the most easily detected, and perhaps one of the most constant of the diagnostic signs of that form of cholera: but it is only in this sense, as a *symptom* or *appearance* of the disease, and in no wise connected with it as a cause, that the name is admitted. But if morbus added to cholera, be indeed a pleonasm, is not biliosa added to it, as is done by Dr. Good, also one, seeing that the generic term, cholera, is expressly adopted by Dr. Good, because *bile* is made to be, "either in its quantity, or quality" the cause of the disease? The specific term, spasmodic, applied to the Indian cholera, has met with very serious opposition; for, if restricted to the affection of the muscles of voluntary motion, it implies a symptom of very minor importance, which in a great proportion of cases indeed, does not at all occur; and of which the existence in other parts of the system, cannot by any means be held as incontestibly proved. The term "cholera epidemica" is that which has been chiefly used of late, especially in official papers, and hitherto it has been sufficiently understood; but, it is obviously adapted for temporary application only. It may therefore be allowable to substitute a term which, it will be attempted to shew, imports an unfailing diagnostic of this species of cholera; namely the *sinking* or *arrest* of the circulation; and, accordingly, to call it cholera asphyxia, using the word asphyxia only in its restricted sense, that is the stoppage, or suppression of the *pulse*.

This proposed specific term, asphyxia, will, it is presumed, designate the disease unerringly; for, as far as our knowledge of it either from history or observation hitherto extends, there appears to be in all cases an evident tendency to a sinking of the circulation, an apparent arrest of it in the vessels of the extremities, if we may judge from the absence of pulse, and from the effect of venesection, in every instance where the complaint is not early cut short by art; and, especially, an arrest of it in every vessel, accessible to the senses, in all fatal cases, at a period before death, comparatively more remote than is known in any other disease.

The term asphyxia appears to have also occurred to Mr. Cruickshank, in 1814, as applicable to the disease since known as the spasmodic or epidemic cholera, though he did not propose to use it as an adjunctive, or specific term for cholera, but in a generic sense. The coincidence is still felt, however, to be confirmatory of the propriety of the appellation of cholera asphyxia, which was adopted in this report, long prior to the receipt of his communication bearing date the 24th July 1823.

In the following remarks, accordingly, the term cholera biliosa will be used in speaking of the common form of the disease, or cholera morbus; and cholera asphyxia, or simply cholera, in speaking of that epidemic which forms the immediate subject of this report.

Description of cholera.

The symptoms of cholera asphyxia can hardly be better detailed, than they are by several of the older authorities, whose descriptions of the disease have been quoted; or, than in many of the original papers which constitute the chief value of this work. The descriptions given in Mr. Jameson's, and Mr. Orton's publications are likewise of the highest value, and little more is left to be desired on that head than a few brief, and supplementary observations.

X

This most formidable disease does not appear to be attended by any premonitory symptoms which can be regarded as being at all peculiar to it; on the contrary, we may safely assert, that it is of sudden invasion: for, though a slight nausea, a laxity of the bowels, and a general feeling of indisposition are often found to precede cholera, yet these symptoms are evidently common to many acute diseases; and they are especially frequent in this climate without being followed by any graver ailment. When such symptoms are found to precede cholera, they might with more truth be regarded as indicating merely a certain deranged state of the alimentary organs, a condition of the body which certainly predisposes a person to an attack of cholera.

The invasion of cholera generally takes place in the night, or towards morning. The patient is sick at stomach, he vomits its contents, and his bowels are at the same time evacuated. This evacuation is of a nature quite peculiar to the disease; the entire intestinal tube seems to be at once emptied of its fæcal or solid matters; and an indescribable, but most subduing feeling of exhaustion, sinking, and emptiness is produced. Faintness supervenes, the skin becomes cold, and there is frequently giddiness, and ringing in the ears. The powers of locomotion are generally soon arrested; spasmodic contractions, or twitchings of the muscles of the fingers and toes are felt; and these affections gradually extend along the limbs, to the trunk of the body. They partake both of the clonic and tonic spasm, but the clonic form chiefly prevails. The pulse, from the first, is small, weak, and accelerated; and, after a certain interval, but especially on the accession of spasms, or of severe vomiting, it sinks suddenly, so as to be speedily lost in all the external parts. The skin, which, from the commencement of the disease, is below the natural temperature, becomes colder and colder. It is very rarely dry; generally covered with a profuse cold sweat, or with a clammy moisture. In Europeans, it often partially assumes a livid hue; the whole surface appears collapsed, the lips become blue, the nails present a similar tint; and the skin of the feet and hands becomes much corrugated, and exhibits a sodden appearance. In this state, the skin is insensible, even to the action of chemical agents; yet the patient generallly complains of oppressive heat on the surface, and wishes to throw off the bed clothes. The eyes sink in their orbits, which are surrounded by a livid circle: the corneæ become flaccid, the conjunctiva is frequently suffused with blood : the features of the face collapse ; and the whole countenance assumes a cadaverous aspect, strikingly characteristic of the disease. There is, almost always, urgent thirst, and desire for cold drinks, although the mouth be not usually parched. The tongue is moist, whitish, and cold. A distressing sense of pain and of burning heat at the epigastrium are common. Little or no urine, bile, or saliva, is secreted. The voice becomes feeble, hollow, and unnatural. The respiration is oppressed, generally slow ; and the breath is deficient in heat.

During the progress of these symptoms, the alimentary canal is very variously affected. After the first discharges by vomiting and purging, however severe these symptoms may be, the matter evacuated is always watery, and in a great proportion of cases, it is colourless, inodorous, and often homogeneous. In some, it is turbid, resembling muddy water; in others, it is of a yellowish or greenish hue. A very common appearance is that, which has been emphatically called the "conjee stools," an appearance produced by numerous mucous flakes floating in the watery or serous part of the evacuation. The discharges from the stomach, and those from the bowels, do not appear to differ, except in the former being mixed with the *ingesta*. Neither the vomiting nor the purging are symptoms of long continuance. They are either obviated by art, or the body becomes unable to perform these violent actions ; and they, together with the spasms, generally disappear a considerable time before death. If blood be drawn, it is always dark, or almost black, very thick, ropy and generally of slow and difficult effusion. Towards the close of the attack, jactation comes on, with evident internal anxiety, and distress : and death takes place, often in ten, or twelve; generally within eighteen or twenty, hours from the commencement of the attack.

During all this mortal struggle and commotion in the body, the mind remains clear, and its functions undisturbed almost to the last moment of existence. The patient, though sunk and overwhelmed, listless, averse to speak, and impatient of disturbance, still retains the power of thinking, and of expressing his thoughts; as long as his organs are obedient to his will. Such is the most ordinary course of cholera asphyxia, when its tendency to death is not checked by art.

A favourable issue is denoted, by a rising of the pulse, a return of heat to the surface, inclination to natural sleep, and a diminution, or cessation of vomiting, purging, and spasms ; these indications being succeeded, after an interval, by the reappearance of fæcal matter in the stools, of bile, of urine, and of saliva.

Varieties in the general features of Cholera, and

Cholera, like other diseases, has presented considerable variety of symptoms : but, before we proceed to notice its more striking varieties, it is necessary to advert to one feature, which, though not altogether unobserved in other epidemics, may still perhaps be regarded as especially distinguishing cholera ; namely, that these varieties are not observable so much in *individual* cases, as, in what may be termed, *local epidemic visitations*. Thus, when the disease appears epidemically in a town, or district, or in the lines of a corps, or the camp of a marching regiment, it may on one occasion be distinguished, throughout, by the absence of vomiting, and the prevalence of purging ; on another, by the excess of vomiting, and, though more rarely, by the absence of purging. Spasm may be generally present in one instance of invasion ; in another it may not be distinguishable. A frequent variety, the worst of all, is that which is noted for the very slight commotion in the system ; in which there is no vomiting ; hardly any purging ; perhaps only one or two loose stools ; no perceptible spasm ; no pain of any kind : a mortal coldness, with arrest of the circulation comes on from the beginning, and the patient dies without a struggle. This has frequently manifested itself as the prevailing type : and almost all die, who are attacked by it : but fortunately it has not usually lasted long ; the disease either disappearing, or assuming during its further progress, a milder or less formidable character.

It would be highly important in a pathological view, could we trace these leading distinctions in the disease, to any paritcular state of the weather, to any local peculiarity, or to any circumstance affecting the food, shelter, or occupation of the people, who may be the subjects of it: but it must be confessed, that this is far from being practicable. It appears, on the contrary to be established, that under circumstances apparently similar in all respects, these modifications of the disease have been found equally to prevail. On the other hand, it may be assumed, that a person, in proportion to the vigour of his constitution and to the unimpaired state of his health, is less liable to be affected with the low form of the disease.

In particular symptoms.
Vomiting.

Vomiting is a prominent symptom of cholera: but there are numerous instances on record, where it has been entirely absent. In certain epidemic visitations even, scarcely an individual case has manifested this symptom: In some cases the stomach appears to be freely and perfectly emptied; prodigious quantities of watery fluid being ejected, occasionally with great force. This fluid sometimes resembles what is discharged in pyrosis; at other times it is glairy and ropy. In other cases, the stomach seems to have lost the power of freely ejecting its contents: there is an ineffectual straining to vomit, and a spouting up of any fluid, which is swallowed, as if by an effort of the lower part of the æsophagus, rather than of the stomach itself. When full vomiting in these cases has been effected by medicine, relief follows; not however, in all probability, by the mere evacuation of the gastric contents, but as a consequence of that change in the condition of the patient, which must necessarily be established, before the stomach can resume the action of vomiting. Vomiting is sometimes altogether absent; or, if it has been present, soon ceases, from an atonic state of the stomach, under which that organ receives and retains whatever may be poured into it, as if it were really a dead substance. This is a most alarming state, in comparison with which, the utmost irritability, or almost any other imaginable condition of the part, may be held to be of little danger.

It is not always easy or possible to ascertain what substance imparts the greenish or yellowish hues to the fluids ejected by vomiting; but it is perhaps too readily admitted, that these colours are owing to the admixture of bile. A regular series of experiments, regarding the effects of chemical agents on the gastric and intestinal secretions, and on the matters discharged in cholera, and in other diseases, is certainly a desideratum. The Medical Board have addressed a circular letter to several of their officers on this subject, which it is hoped will ultimately be the means of drawing forth some precise information.*

Supposing, however, that either the yellow or green hue of the matter vomited in cholera, indicates the presence of bile, it is undobtedly of rare occurrence, especially during the acute stage of the disease. It would appear, nevertheless, that apparently bilious matters have been vomited, particularly at the beginning, and towards the favorable termination of the disease, and even in cases, which have ended fatally. The mere presence of bile in the discharges cannot, therefore, be held as decisive against the disease being the cholera, of which we are treating. Worms, especially the lumbricus teres, have been very generally ejected by vomiting: and several medical officers have noticed, that this symptom has even indicated a less dangerous form of the disease. If there be any truth in the observation, it is probably referrible to the *free* action of vomiting, which brings up these animals; this being in itself a favourable symptom.

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* On mixing 20 grains of calomel with an ounce of ox bile, which was previously of a “ grass green colour,” the bile assumed the hue of “ pea green.” This hue was rendered more intense by the application of heat, and took on a tinge of yellow. After standing 24 hours, the mixture was of “ a dark or sap green.” The calomel appeared at the bottom like “ blue ointment:” and was “ unctuous” to the feel. On mixing 40 grains of calomel with an ounce of ox bile, previously of a “ light brown colour with a shade of green,” the mixture assumed the colour of “ ochre.” After standing it assumed a “ grass green colour.” The calomel was discoloured in a less degree than in the former experiment. On mixing 15 grains of calomel with 6 drachms of sheep's bile, which was of a “ dark brown colour with a shade of green,” the mixture put on a “ light pea green with a tinge of yellow.” On subsidence of the calomel, which was apparently unchanged, the bile appeared of a “ rich dark green colour.” On mixing 40 grains calomel with two drachms of goat's bile, which was of a “ dark green colour,” no change of colour took place:

On mixing 4 drachms of ox bile of a “ light brown colour,” with an equal quantity of liquor ammoniæ, the mixture assumed the colour of madeira wine. Equal parts of sheep's bile and liquor ammoniæ being mixed, the fluid became of a light yellow colour. The bile was previously of a deep yellow.

On mixing equal parts of sulphuric æther and ox bile, which was previously of a “ pea green colour,” the fluids did not unite. The æther got a “yellow tint: and the bile became of a yellowish hue.”

These observations have been kindly communicated by Mr. M'Farland, Assistant Surgeon.

Purging.

Purging is a more constant symptom of cholera than vomiting: and in a majority of cases, it is the first in the order of occurrence; but, being a less striking deviation from a state of health than vomiting, which instantly arrests the attention, it has usually been treated of in succession to it. This symptom has very rarely been altogether absent: but there seems no reason to doubt, that this is sometimes the case. Its absence appears indeed to denote a peculiar degree of malignancy in the attack. The accounts given by the patients, however, in respect to their alvine evacuations, are not to be implicitly believed. Their attention is not always drawn to the nature of the discharge: and they are apt to convey very erroneous notions on the subject to the medical attendant. In cases, where little or no purging has taken place during life, the intestines have yet been found, after death, to be filled with the conjee like matter, as if they had wanted energy to throw it off, or, as if a stricture had been formed on the lower portions of the gut. The intestinal canal appears to be subject indeed to the same influences, and its contents appear to vary, as has been stated to be the case with the stomach, with this exception, that it seems always to have the power of emptying itself of its *natural* contents at the commencement, or during the progress of the disorder. This inference is drawn from the accounts of dissections; for we find no instance recorded of fæces remaining, unless in very protracted cases, when the primary disease has been overcome. The dejections are sometimes made without effort or uneasiness; at others, they are thrown out with great force, which has been compared to the squirt of a syringe. They also sometimes take place simultaneously, with vomiting, spasm, and stoppage of the pulse, as if all these affections originated, at the instant, from one common cause. There is seldom much griping or tenesmus, although the calls are very sudden, and are irresistible. Pain on pressure of the abdomen is only occasionally noticed. In advanced stages of the disease, purging generally ceases: but in many cases, a flow of watery fluid from the rectum, takes place on any change of position. The matters evacuated, after the first emptying of the bowels, have been occasionally observed to be greenish, or yellowish, turbid, of a frothy appearance like yeast, and sometimes bloody. In some cases they are inodorous, in others they have a rank fleshy smell. In one fatal case, pure bile, it is said, was discharged. Perhaps much of this variety may depend on the previous state of the large intestine, especially in Europeans, who so generally labour under a morbid condition of that organ: but, by far the most common appearance is that of pure serum, so thin and colourless as not to leave a stain on the patient's linen. The next in order of frequency is the conjee like fluid; the mucus is at times so thoroughly mixed, however, with serum, as to give the whole the appearance of milk or chyle. The evacuations have also been observed to resemble soogee in colour and consistence: and these cases were mild. Worms are very commonly discharged by stool. The reappearance of fæcal matter, especially if tinged with bile, seldom, perhaps never, takes place till the disease has been subdued. The quantity of the clear watery fluid, which is sometimes discharged, is exceedingly great; and, were it uniform, it might afford us an easy solution of the debility, thirst, thickness of the blood, and other symptoms: but it is unquestionable, that the most fatal and rapid cases are by no means those, which are distinguished by excessive discharges. We have innumerable instances, on the contrary, of death ensuing after one or two watery stools, without the developement of any other symptom affecting the natural functions. Even collapse has come on, before any evacuation by stool had taken place.

Animal functions.

Though the animal functions necessarily partake of that disorder of the vital and natural functions, which very strikingly characterises cholera, yet this participation is not so immediate as we might, a priori, be led to expect. The undisturbed state of the mind has been the subject of general remark: but it cannot be matter of surprise, should some exceptions occur, from a fortuitous morbid affection of the brain following a state of sanguinous congestion. There is reason to believe, that the simple congestion observed in cholera has not been the cause of the coma, or insensibility, which have been remarked: and, when we recollect, that almost all practitioners advert to the great reluctance of the patient to be aroused, we must admit, that cases of imputed coma may have often been referrible to this condition, which have yet been reported as arising from physical disability. Instances are not wanting of patients being able to walk, and to perform many of their usual avocations, even after the circulation has been so much arrested, that the pulse has not been discernible at the wrist. Much seems to depend, on the constitutional strength, and firmness of mind in the patient, and on the form, in which the disease has made its attack. The cases here alluded to are those chiefly, in which it has begun by an insidious watery purging: and many lives have been lost in consequence of the patients, under these fallacious appearances, not taking timely alarm, and applying for aid. In other cases again, the animal functions appear to have been early impaired, and the prostration of strength to have preceded most of the other symptoms.

Spasm.

Spasm has been held to be so essential a feature of that species of cholera, of which we are treating, as to confer on it a specific name. In so far, however, as relates to the muscles of voluntary motion, and it is that description of spasm only, which we mean here to treat, no symptom, is more frequently wanting. Spasm of the muscles chiefly accompany those cases, in which there is a sensible and violent commotion in the system. Hence they are more frequently found in european than in native patients; and in the robust of either, than in the weakly. In the low, and most dangerous, form of cholera, whether in european or native cases, spasm is generally wanting, or is present in a very slight degree. The muscles most commonly affected are those of the toes and feet, and calves of the leg; next to them, the corresponding muscles of the superior extremities; then those of the thighs and arms; and, lastly, those of the trunk, producing various distressing sensations to the patient. Amongst these, hiccup is not unfrequent, but it has been observed that this symptom, in cholera, is not at all indicative of danger. The muscles of the eye balls have not been observed to be affected with spasm, unless the sinking of these organs in their orbits may be considered to be an effect of it. The reports make frequent mention of a remarkable, permanent contraction of the muscles of the abdomen, by which the belly is drawn towards the spine. The spasms attending cholera are of a mixed nature, not strictly clonic; the relaxations being less prompt and frequent than in epilepsy or convulsion; and seldom durable as in tetanus. The contractions of the muscles are invariably attended with pain, and some Medical Officers have observed, that a degree of spasmodic stiffness has continued for several days afterwards. It has also been remarked that spasmodic twitchings of the muscles have taken place after death, and have continued for a considerable time. In one case, where a man had been paralytic in his limbs, with a total numbness of them, they were severely affected with spasms, and became exquisitely sensible. It is pretty evident, that there either has been an inaccuracy in the description of spasm occurring in cases of cholera, or a sensation differing from that of spasm has been confounded with it; for, by the descriptions, we would be led to suppose that the spasms begin, and are felt, *in* the toes and fingers, which cannot be the case. As the extreme muscles however are generally first seized with spasm it is probable that the small fleshy bundles in the palms of the hands, and soles of the feet *are* affected ; but there seems reason farther to conclude, that pain *is* really felt *in* the fingers and toes, and that it is referrible to a sort of nervous twinge or tic doloreux in these parts, distinct from spasm, which is not uncommon in other disordered states of the digestive organs.

Collapse.

Of all the symptoms of cholera, none is so invariably present, none indeed so truly essential and diagnostic, as the immediate sinking of the circulation. It must nevertheless be admitted, that, where instant remedial measures have been successfully practiced, this symptom may not have developed itself; and that there are even cases, where an excited vascular action has been observed to accompany the first movements of the system in cholera. Some intelligent practitioners have entertained doubts whether such cases belong indeed to this disease ; and there seems reason to imagine that these inflammatory affections with spasm, known in this country, and alluded to in several reports, may, in some instances, have been mistaken for it. It is farther to be remembered that these are precisely the cases, which yield most certainly and readily to our remedial means : and it consequently follows, that a medical man can seldom have the opportunity of observing, whether, or not, this form of cholera will degenerate into the low stage. There is, however, direct evidence in support of the fact, that they have so degenerated, and gone on to a fatal termination. In the case of soldiers too, in whom such symptoms have chiefly appeared, we must make some account of the quantity of spirits usually drank by them at the commencement of the disease, producing an effect on the circulation. The period, at which a marked diminution of vascular action takes place, is somewhat various. The pulse sometimes keeps up tolerably for several hours, though very rarely. It more generally becomes small and accelerated at an early stage ; and, on the accession of spasm, or vomiting, suddenly ceases to be distinguishable in the extremities. The length of time, during which a patient will sometimes live in a pulseless state is extraordinary. Dr Kellett relates a case, where the pulse was gone within three hours from the attack ; yet the man lived in that state, from the 3d October at 4 P. M., to the 6th at 2 P. M. On the cessation of the spasm or vomiting, and sometimes, apparently, from the exhibition of remedies, the pulse will return to the extremities for a short time, and again it will cease. The superficial veins, and arteries are not always collapsed, even when the pulse has ceased. If these vessels be opened in this condition, the contained blood flows out ; their walls then collapse, and no more blood can be extracted. There is no authenticated fatal instance of cholera on record, where the circulation has not been arrested, in the extremities at least, long before death took place. The only apparent exception to this conclusion would not have been deemed deserving of particular attention, were it not, that in the faithfulness of record, which it is hoped distinguishes this report, nothing, purporting to be a medical fact or observation, is omitted. The case is this. " Scarcely any disease occurred on the march with the exception of a few cases of cholera ; of these, a havildar and sepoy died, and several followers, who seldom were reported in time to receive any aid. One of the last class, a fine stout young man, a bullock driver, was brought to hospital almost in the last agony ; I mention this case from the peculiarity of the patient's skin being hot and dry, and his pulse being about 120, full and strong, until the last moment, circumstances I had never seen before ; while from the peculiar appearance of the eyes, and the collapsed features, together with the description given of the attack, and progress of the disease left me no room to doubt its being genuine. 1st July 1821." The writer of the preceding extract notices the case for its singularity : and, in judging of its identity with cholera asphyxia, we must allow due weight to the circumstance of his attention being thus excited. He acknowledges, however, that the patient was brought to him in the last agony, and draws his conclusions from the reports of the manner of attack and progress of the disease, and from the appearance of the features of the face. We are left to conjecture as to the former of his grounds of belief ; and shall, therefore, only hint at the possibility of coup de soleil having been mistaken, *on description*, for cholera : but, the sudden collapse of the countenance, which takes place in cholera, seems hardly reconcileable with any condition of body, in which the skin is dry and warm, and the *pulse full and strong!* That peculiar state of countenance is manifestly the result of the retrocession of the blood from the surface ; and it is quite distinct from the wasting of the solid parts from disease, or inanition. That a case of cholera may terminate in death, and the pulse remain, *at* 120, *full and strong* to the last moment, is not physically impossible, although at present standing single on the records : but, when supported by hearsay evidence, and by an observation, which, it has been attempted to shew, is not tenable, we may be allowed to regard it as one of those *facts* alluded to in the beginning : and, being palpably at variance with general experience, it is to be weighed with much caution and circumspection, if not totally rejected.

Thirst, and sense of heat in the epigastrium.

Thirst, and a sense of heat, or burning, in the region of the stomach, are generally connected together, and form very prominent, and constant symptoms of cholera : yet, not only in individuals, but even in epidemic invasions, these symptoms have often been altogether wanting. Even when they are present in the highest degree, the mouth is not often parched, nor the tongue often dry ; on the contrary, there seems in general no want of moisture : and, while, as Mr. Jameson observes, " all is burning within," these surfaces are cold, and blanched. At times, however, the mouth is parched, and the tongue dry, and furred : but practitioners seem doubtful, whether any practical inference is thence to be drawn. What would be the state of these parts, if calomel, ardent spirits, laudanum, and spices were as largely employed in health, or in many common diseases, as in cholera, with as scanty a use of diluents ? Might we not perhaps say, that a parched mouth and furred tongue, following the exhibition of such remedies in cholera, is rather favorable than otherwise, as indicating an action counter to that of the disease ? When thirst *is* present, it seems to subdue all other feelings ; and, the ignorant soldier, as well as the medical man, who firmly believes that cold water is almost certain death, alike eagerly seek and swallow it. Two melancholy instances are recited, where Medical Officers have exerted their last and utmost efforts to reach, unperceived, even the water of the bathing tub ; so intolerable are the pangs of this cruel thirst.

State of the skin.

The state of the skin in cholera is, in general, what we might expect to find it in patients labouring under such affections of the alimentary canal, and with the subdued circulation, which takes place in that disease. It is cold, generally clammy, and often covered with profuse cold sweats. Nevertheless, varieties occur in this, as in the other symptoms of cholera. The skin is sometimes observed to be dry, though cold ; and sometimes of natural, nay, in some rare instances, of preternatural warmth. An increase of temperature has been repeatedly observed to take place just before death : but the developement of heat appears to be confined then to the trunk, and head ; and, in almost all cases, this *partial* developement of heat is found to be a fatal symptom. It is entirely unconnected with any restoration of the energy of the arterial system, or any improvement in the function of respiration. The heat, in such instances, has been observed to continue considerable, for some hours after death.

The sensation imparted by touching the skin of a person ill with cholera is very peculiar, and reminds one of that imparted by a dead body. The skin when much collapsed, becomes insensible, even to the action of chemical agents ; and hence the usual vesicatories fail in producing any effect. The application of mineral acids, and of boiling water, in this condition of the skin, produces little or no effect, and some patients are said not to have been sensible of the operation.

The action of mineral acids on the skin is not, however, vesication, but rather that of a cautery ; the cuticle, and the extremities of the subjacent vessels, appearing to be destroyed by them. It has been said, that vesication could not be produced in some stages of cholera, because the production of serum was, in common with the glandular secretions, arrested ; but, when we reflect on the readiness, with which serous fluids are poured out in that disease, we shall be rather disposed to refer the failure in the action of vesicatories, even of hot water, to the diminution, or destruction of the nervous energy of the skin. It is certain, that in a body *but just dead,* the application of boiling water will visicate readily ; and, if the accuracy of the observation respecting its non-visicating power in advanced stages of cholera be established, we must infer, that there is less vitality in the skin in such cases, the patient being still alive, than in that of a body *recently* dead of some other disease.

At a very early stage in cholera leeches can procure little or no blood from the skin. This fact is noticed by some in another sense, as if these animals turned in abhorrence from the skin of a person ill with cholera. When the sweat is thin, it is usually poured out, in large quantity, from the whole surface of the body ; but, when thick or clammy, it is more partial, and generally confined to the trunk and head. The action of the vapour, and hot baths, seems unquestionably to increase the exudation, or secretion from the skin ; and the application of dry heat, as the natural temperature of the skin augments, appears to restrain these discharges ; circumstances not very compatible with the supposition of a state of spasm of the vessels of the skin. The perspiration or moisture is often free from odour ; at other times it has a fœtid, sour, or earthy smell, which has been said to be peculiarly disagreeable, and to " hang long about the nostrils" of the bye-stander.

Countenance.

That remarkable shrinking of the features of the face, which has acquired the emphatic term of the " true cholera countenance," appears in every case, not quickly cut short by medicine : but the degree, in which this symptom may be present, will be differently estimated, according to the natural contour of the patient's features. This expression of countenance, which conveys too truly that of death itself, cannot be mistaken : and, by an attentive observation it will be perceived, that a similar shrinking takes place throughout the limbs and all projecting parts of the body. The eyes not only become dim, and the corneæ flaccid, but there appears to be an actual formation of a substance like a film, or membrane, in many cases ; shewing, that this species of surface still possesses secreting powers. The abdomen has sometimes been observed to be tumid, but more frequently drawn towards the spine. The general apparent reduction of bulk, cannot however be considered as proportionate to the volume of fluids thrown out ; nor, indeed, to depend essentially on that circumstance, as it occurs equally, under the most moderate discharges.

Respiration.

Respiration is not usually interrupted in the early stages of cholera, unless from a peculiarity in the mode of attack, under which spasm seizes the muscles subservient to that function. In many cases terminating in death, respiration has gone on in its mechanical part, with little or no interruption, except that it becomes slower and slower : and an instance has been recorded, where this function was performed only seven times in the minute. Numerous cases on the other hand are noticed, especially in Europeans, where the interruption of respiration was most distressing, and could only be compared to the most violent attacks of asthma. Although the breath is stated in many of the reports, to have been deficient in heat, it is not clear that this was a general symptom : nor is it understood, that this coldness was more particularly observed in cases of difficult and laborious respiration, than in those, where this function seemed to be, at least mechanically, performed without interruption.

Jactation.

With respect to restlessness, or jactation, it is more common with Europeans than with natives. In cases of such sudden and dangerous illness, we must make some allowance for moral, as well as physical disquietude ; and it is certain, that in very many cases, death approaches, while the patient lies in the most complete tranquillity. When much restlessness prevails, it is probably connected with some great oppression of particular organs ; and, though the absence of this symptom is not, in itself, to be depended upon as affording grounds for a favorable prognosis, its presence is always highly alarming. The voice, in general, partakes of the debility prevailing in other functions, and is usually noticed as being feeble, often almost inaudible. Yet, instances are not wanting, where the voice has continued of natural strength almost to the last moment.

Functions of the sensorium.

In a disease so highly congestive as cholera, where vertigo, deafness, and ringing in the ears, often prevail, and where very large quantities of opium and intoxicating matters have been swallowed, it is truly surprising, that the functions of the sensorium are so very rarely disturbed. It seems probable, that it is in many instances from an inaccuracy of language, that coma has been represented as a symptom of cholera: for we find, that patients, who have just been represented to be in a *comatose* state, can, with more or less facility be roused from it: and, though he cannot overcome that retirement within himself, which constitutes so remarkable a feature of the disease, he will yet evince, by the clearness and precision of his answers, that his intellect is not destroyed. The same appearance takes place in tetanus, hydrophobia, and other diseases referred to the class of neuroses. This circumstance shews their affinity with each other, and is calculated to make us pause in receiving doctrines as true, which impute such disorders to depraved functions of the nerves, whose origin, the sensorium commune, nevertheless, remains comparatively undisturbed. Coma must, however, be admitted occasionally to occur, especially towards the termination of the case, when it is fatal: but delirium has seldom or never been observed, unless as a sequelæ of cholera, when other and foreign morbid actions have been established. That degree of incoherence, which has accompanied the excessive spasmodic affections of the muscles, or which has followed the free use of opium and spirits, is not considered as an exception to this remark.

Syncope is not a common symptom in cholera, and when it has occurred, unless after venœsection, it has generally been on the invasion of the disease. During the progress of this disorder, when the nervous energy seems to be almost annihilated, and the functions of the heart and artries to be abolished, this symptom is yet very rarely observed! Deafness has been remarked, in some instances to have been completely established, before any other symptom of the disease had developed itself; the patient continuing, for a time, to pursue his ordinary employments.

Recovery.

When medical aid is early administered, and when the constitution is otherwise healthy, the recovery from an attack of cholera is so wonderfully rapid, as perhaps to be decisive of the disease being essentially unconnected with any organic lesion. In natives of this country, especially, in whom there is ordinarily very little tendency to inflammatory action, the recovery from cholera is generally so speedy and perfect, that it can only be compared to recovery from syncope, cholic and diseases of a similar nature: but, in Europeans, in whom there is a much greater tendency to inflammation, and to determinations to some of the viscera, the recovery from cholera is by no means so sudden or so perfect. On the contrary, it is too often involved with affections as various as the diseases of these viscera are known to be in this climate. The most frequent of the sequelæ of cholera are affections of the intestines, of the brain, of the liver, and of the stomach. When cholera, however, is of long continuance, and when the *congestion* appears to have been thoroughly established, few, either europeans, or natives who outlive the attack, are restored to health without considerable difficulty.

It has been already remarked, that recovery from an attack of cholera is indicated by the return of heat to the surface of the body, and a rising of the pulse. A deceitful calm, however, sometimes attends these favourable appearances, which too often mocks our hopes and expectations. When the disease is characterised by violent morbid actions, the diminution or cessation of these, however sudden, may generally be regarded as the usual mode, in which nature conducts the patient to recovery: but, in what may be termed *negative* symptoms, the steps to recovery are extremely dark and obscure: and the evolution of natural heat, and arterial action have occasionally been noticed as amongst the last of the functions, which are restored. Patients have been observed to remain for one, two, and even three days in a state of the greatest collapse, and yet, contrary to all expectation, have recovered.

Urine.

In cholera the secretion of urine, like all the other natural secretions, appears to be very generally suspended. This, indeed, has been considered so much a matter of course, that practitioners have very frequently not noticed it in their reports: but, wherever the secretion has appeared to be going on, the circumstance is particularly mentioned. When cholera first appeared, attempts were often made to relieve the patient by the catheter, under the supposition that the absence of urine was owing to *suppression*. When this secretion is not suspended during an attack of cholera, the urine is almost always limpid and clear, though in very small quantity; a curious phenomenon, considering the probable state of the blood under such circumstances: for we may be permitted to infer from all the symptoms, that the blood is not only deprived of much of its serous or aqueous parts, by the profuse discharges which usually take place, but that the elements of all, or most, of the other natural secretions, are retained in it. We might, therefore, naturally have expected, that, if urine were secreted at all, it would possess some striking deviation from its natural appearance. Admitting that the blood is not freed from the elements of the secretions, which usually take place in health, what effect may their presence be supposed to have in producing some of the symptoms of the disease?

It has been remarked, that the cases, in which urine appeared to be secreted, were not less dangerous than those, where this secretion was entirely suspended: but it is much more generally observed, that the appearance of urine, especially when this is the result of *restored* secretion, is always a most favorable omen. In many cases the secretion of urine has not been restored, before a period of 50 hours had elapsed from the commencement of the attack: and it has even been reported, that during a local prevalence of cholera, the secretion of urine has been, in some individuals, entirely suppressed, although no other derangement of the health took place. Instances of this kind were generally observed during great heats, and under much fatigue.

State of the blood.

No symptoms of cholera are so uniform in their appearance and progress, as those connected with the blood, and its circulation. Although the reports, in general, afforded ample reference to this point, it still appeared to the Medical Board to be one of such importance in the pathology of the disease, that a circular letter was addressed to about thirty Medical Officers, who were supposed, from their experience in the treatment of it, to be best qualified to afford information. Attention was especially directed to the following considerations: first the influence which the state of the blood, in those affected with cholera, might be supposed to have in producing some of the symptoms: second, the colour of the blood abstracted from a vein in a person affected with cholera: third, the colour of the blood after a certain quantity had been taken, and, the effect, which any alteration of colour might have on the condition of the patient: fourth, if arteriotomy had been practised, the colour of the arterial blood in cholera: and lastly, the period, from the first attack of the disease, at which blood was abstracted. It is established by the replies to this letter, as well as by an immense mass of concurrent evidence, that the blood of persons affected with cholera, is of an unnaturally dark colour and thick consistence. These appearances are very uniformly expressed by the terms, dark, black, tarry, in regard to colour; and by thick, ropy, syrupy, semicoagulated, in respect to its consistence. The change in the condition of the blood is likewise fully proved to be in the ratio of the duration of the disease; the blood, at the commencement seeming to be nearly, or altogether natural, and more or less rapidly assuming a morbid state as the disease advances. Some very rare cases are recorded where, however, this morbid state of the blood was not observable, although the disease had been for some time established: and instances have occurred, where the blood flowed readily, sometimes little altered, where, nevertheless, death ultimately ensued. The abstraction of blood has been found by all practitioners to be very difficult and uncertain; and the uncertainty has been variously imputed to the feebleness of the circulation, to the thick consistence of the blood, and to the combined operation of these causes. The blood drawn from patients, suffering under cholera, is stated to be generally very destitute of serum, never to exhibit the appearance of buff, and to be generally disposed to coagulate quickly. Several instances, however, have occurred, where the coagulation was slow, and imperfect. A great majority of the reports state unequivocally, that, after a certain quantity of dark and thick blood has been abstracted from a patient under cholera, it is usual for its colour to become lighter, its consistence to become less thick, and for the circulation to revive; such appearances always affording grounds for a proportionably favorable prognosis. In many instances, however, no such changes have been observed to accompany the operation of bleeding, while yet the result was favorable. The blood is generally found to be less changed in appearance, in those cases of cholera, which are ushered in with symptoms of excitement, than where the collapsed state of the system has occurred at an early period. The blood has been occasionally found, on dissection, to be of as dark a colour in the *left*, as in the *right* side of the heart; affording reason to believe that in the whole arterial system it was equally changed. The temporal artery having been frequently opened, the blood was found to be dark, and thick, like the venous blood: but it would appear, that this operation has not been performed in general, until the attempts to procure blood from the brachial or jugular veins had failed: little or no blood could be obtained, the artery merely emptying itself in a languid stream, not in a jet, and then collapsing. An instance is stated where the surgeon, despairing of other means, cut down upon the brachial artery, but so completely had the circulation failed, that no blood flowed. When reaction has been established, the blood occasionally shews the buffy coat.

It would have been highly interesting, if, in those cases of cholera, which were distinguished by the freedom of the mechanical part of the process of respiration, and by the absence of great alvine or cuticular watery discharges, the colour and consistence of the blood had, in a greater number of instances; been ascertained. The evidence on these points, however, must be acknowledged to be defective. Amongst natives, respiration is pretty generally free until the very last stage; and the colour and consistence of the blood, in the instances where venesection has been performed, has been very uniformly stated to be dark, whether excessive discharges prevailed or not. It may thence be allowable to conclude, without any farther particular evidence, that though the passage of the blood through the lungs has been free, its natural change is interrupted by cholera. The coldness of the body in cholera, not only on the general surface, but in the axilla, as ascertained by the thermometer, might also warrant us in concluding, that the *temperature* of the blood is under the natural standard: but the inference is not sufficiently established by accurate observation. With respect to the watery discharges, we are not always sure that during life the stomach or intestines have been emptied. These organs have sometimes been found, after death, to be filled with fluid, though no purging, or vomiting had been observed. Although, therefore, the thick consistence of the blood would seem to find a ready explanation in the circumstance of the profuse excrementitious discharges robbing it of its natural serum: and although the general tenor of the reports would seem to warrant the conclusion, it must yet be confessed there is reason to believe, that the blood has been found occasionally to present these appearances, when no such discharges had taken place.

The terminations of cholera.

The terminations of cholera will readily be apprehended from the observations, which have already been made. It is the declared opinion of many of the practitioners, who have had to cope with the disease, that its tendency to death is so great as never to be counteracted by the unaided efforts of nature. The same opinion is no less evidently implied by the obervations of all, that the delay of but a few hours places the patient beyond the reach of art: for hours are, in this disease as days in any other. There are not wanting men, however, who, either from an affectation of singularity, or from the melancholy results of their own practice are said to doubt the power of medicine in the cure of cholera, and to ascribe the recoveries, which they have witnessed, to the natural, unaided powers of the constitution. Such feelings are too apt indeed to arise in the mind, when the sad experience of some malignant epidemic visitation, or a succession of intractable cases, comes to be contrasted with the more successful efforts of others, who have had a less formidable enemy to combat: but they are especially apt to arise on hearing of the reputed cures made by the aid of native establishments. It is obviously very difficult to arrive at the means of making a true estimate on this subject. Where the aid of the European practitioner has been applied, the mortality has still undoubtedly, been extremely great; and the accounts of native doctors cannot be at all relied on, either for their veracity, or their qualifications to discriminate the disease. Such of the reports of the native revenue servants as have come under the observation of the Medical Board, all tend to prove that by far the greater proportion of people, who suffered attacks of cholera, and had no efficient aid, died. The Ameen of Ganjam writes thus; "The people, who get the cholera morbus never recover: death to them is certain." The Resident at Hydrabad states, that he feared every case treated by the natives proved fatal. The family of a wealthy Nair in Travancore, consisting of 19 people, were all, save one, cut off in a few hours. Another family of five all died. Mr. Searle, at Manantoddy, states, that of 28 villagers attacked with cholera, 26 died; the other two recovered by his assistance. Death may, therefore, be said to be the ordinary termination of cholera; and there is, in truth, very little variety in the course, which the disease pursues towards it. This has already been described as consisting in a general suspension of the natural, and a gradual cessation of the vital functions, rather than in the establishment of morbid actions. Cases have been remarked, where the vital functions have been more suddenly overcome, and where death took place before the usual developement of the symptoms; others, where life is extinguished in some sudden convulsive commotion of the system; and some, as if from apoplexy. Fatal terminations likewise occur from topical inflammations supervening; as, gastritis, enteritis, or hepatitis — The intestinal canal seems especially obnoxious to the effects of cholera, numbers of those attacked with it, having subsequently been seized with dysentery. The favorable issue of cholera certainly resembles that of diseases usually called spasmodic, unless in cases, where it has lasted so long as to involve other trains of morbid actions, connected with organic lesion; or with a febrile affection of the sanguiferous system. As its fatal termination has been stated to be effected by a suspension of the natural, and a gradual cessation of the vital functions, so its favorable termination may be stated to be simply a restoration of these functions; a change, which usually takes place with considerable rapidity, and which often arises under circumstances apparently the most desperate.

Diagnosis.

The diagnosis in cholera is seldom involved in any considerable difficulty, or obscurity. The most important distinction is that between the two species of cholera, the cholera biliosa, and the cholera asphyxia, especially that form of the latter, which is primarily attended with symptoms of excitement. Where the evacuations are tinged of a yellow, or greenish hue, where the matter vomited is bitter to the taste, while the skin remains warm, and the pulse good, the disease may be regarded as bilious cholera, commonly so called;—but, where, after the first emptying of the primæ viæ, the evacuations are of a watery consistence, colourless, turbid, or white; when no urine is voided; where the surface becomes cold; where the features are collapsed; where the spirits are greatly depressed; and where the pulse quickly flags, the case may almost certainly be regarded as cholera asphyxia. As the disease advances, the cessation of the pulse in the arteries of the extremities, the shrivelled and corrugated skin of the hands and feet, the restlessness, deafness, and general depression, leave no doubt of the nature of the disease. Many affections denominated nervous, such as syncope, cholic, hysteria, dyspepsia, spasm of any kind, and the cold stage of fevers are apt, during the prevalence of cholera, to create an alarm of it. The remedies applicable to such cases being in general equally appropriate to the treatment of incipient cases of cholera, and their effects in both instances being often very similar, it is much to be suspected that many of the former have been improperly pronounced to be cases of the latter. Cases of cholera sometimes, apparently, commence by an insidious diarrhæa; or supervene on the action of purgatives, especially saline purgatives; and are then exceedingly apt to be mistaken, both by the patient, and his physician. All the experience which we have yet had leaves the mind much in doubt whether this diarrhæa be a primary symptom, or merely indicates a predisposition to the disease. The same observation applies to the effect of purgatives. In such difficult cases, much may be inferred from the state of the epidemic influence prevailing at the time. If cholera be prevalent, they will generally attract immediate notice, and it is the safest course to treat them as cholera: but many of our most lamented casualties have happened from seizures of this description, which were solitary, and altogether unsuspected by the sufferers till too late. There seems however to be something peculiar to cholera, in blinding the patient to the real nature of his case: or, perhaps, conscious of the tendency of some of his symptoms, he seeks to repress the conviction; and is unable to admit or believe, that, with little sensible disturbance of health, he already stands on the verge of his grave.

Appearances on dissection.

The appearances on dissection, after death following attacks of cholera have been very extensively ascertained, in the bodies of European subjects, but in an extremely limited degree in those of native subjects. This is generally stated to have arisen from the aversion betrayed by the friends of deceased natives to the operation of dissection, as if this aversion were peculiar to them. The truth however rather seems to be, that when a European soldier dies, it is extremely rare, that there is any person so connected with him as to derive the right of objection to a post mortem examination: while every native has friends at hand to see the last offices performed to his body. It is probable that were the cases similar in this respect, we should hear as much of the objections of Europeans, as of natives to dissection of the dead bodies of their friends and relations.

Although dissections are very generally practiced in European hospitals in this country, they are performed under some disadvantages, which must operate to a certain extent, in diminishing the minuteness and accuracy of the information thence derived. The heat of the climate imposes the necessity of interment at a very early period after death; and it likewise imposes the necessity of interring at certain hours of the day, either soon after sunrise, or about sunset. Hence, if a man dies at any time between noon and sunset, his corpse is generally interred the following morning; if he dies any time between sunset and noon, the body is generally buried in the following evening. It follows therefore that there is often but a very limited time allowed for dissection; the pressure of these circumstances however not unfrequently leads to the operation being performed so immediately after death as to afford considerable advantages. Dissections have been chiefly made on the bodies of European soldiers, a class of men acknowledged to be peculiarly liable, in this climate, to visceral disease of all kinds. Under these circumstances, dissection reports should be viewed with care, in reference to the general states of morbid bodies; and with the most attentive consideration of the precise import of the terms employed.

The external appearance of European subjects, who have sunk under cholera, closely resembles that which has been noticed as taking place during life. The surface is livid, the solids are shrunk, the skin of the hands and feet is corrugated. There seems no sufficient evidence of any uncommon tendency in the body to putrefaction after death, nor of any characteristic fœtor from the abdominal cavity. No particular morbid appearances have been found in any of the cavities of the body, which are lined with *serous membranes,* or in these membranes themselves. The cavities of the pleura, of the pericardium, and of the peritoneum, have, almost uniformly, been found in a natural state; or, the deviations from that state have manifestly had no connection with cholera. The surfaces which are lined, or covered with *mucous membranes,* have, on the contrary, very generally exhibited signs of disease. These will be noticed, as the organs connected with them, come to be mentioned.

The lungs have not unfrequently been found in a natural state, even in cases where much oppression of respiration had existed previously to death. Much more generally, however, they have been found either to be gorged with dark blood, so that they have lost their characteristic appearance, and have assumed more that of liver, or spleen; or they have been found to be in the opposite state; that is, collapsed into an extremely small bulk, and lying in the hollow on each side of the spine, leaving the cavity of the thorax nearly empty. This appearance has been so remarkable as to induce Dr Pollock of H. M 53d regiment to conceive, that it could only be produced by the extrication of a gas within the cavity of the pleura, capable of overcoming the atmospheric pressure. It is understood, however, that opportunities were had of piercing the thorax of the dead body under water, and that no gas was extricated. As there appears to have been an absolute vacancy in the cavity of the pleura, that is to say, the lungs did not by any means fill it, it would seem that that viscus had exerted a contractile power, adequate to overcome the pressure of the atmosphere. The blood found in the lungs has been always very black. The heart and its larger vessels have been found to be distended with blood, but not so generally as the apparent feebleness of their propelling power, and the evident retreat of the blood to the centre, would have led us to expect. The right auricle and ventricle being gorged with blood, is nothing peculiar to cholera; but some dissections have shewn the left cavities to be filled even with *dark* or *black* blood, which we may reckon as a morbid appearance more peculiar to it. In the abdominal cavity, the peritonial coverings of the viscera, being *serous membranes,* present in general but little deviation from the healthy state: occasionally, indeed, the morbid accumulation of blood in the vessels of the viscera, imparting an appearance of turgidity and blueness, is evident on their exterior surfaces. We also find them bearing marks of inflammation, especially where the patient may have lingered long, before death. In other cases, the whole tube has had a blanched appearance, both externally, and internally. The stomach and intestines generaly preserve their ordinary volume. The appearance of the omentum is not sensibly affected in cholera. The stomach is found to be so variously affected as to destroy all grounds for pathological reasoning. It is very rarely found empty, or much contracted after death, nor has any appearance of spastic stricture of the pylorus been often detected. It has however sometimes occurred. Its contents appear to be chiefly the ingesta in an unaltered state: in some cases greenish, or yellow, or turbid matters are found. The stomach has been said to have been found "lined with calomel." Various appearances, either of active inflammation, or a congested state of the vessels, have been noticed, sometimes in one part, and sometimes in another. The parts seem as if they were sphacelated, thickened, softened, and friable; and, in short exhibit so great a variety of appearances, from a perfectly natural state, to the most morbid, that no particular light is thrown by them on the disease.

The intestinal tube is sometimes collapsed, but oftener found to be more or less filled with air; distended in some parts into bags, or pouches, containing whitish, turbid, dark, or green coloured fluid: and in others, presenting the appearance of spastic constriction. The latter, however, is not common. No fœcal or other solid matters are found in the intestines; but, very commonly, large quantities of the conjee looking fluid, or of turbid, serous matter. The duodenum, and occasionally the jejunum have been found loaded with an adheent, whitish, or greenish mucus; at other times they have been found seemingly denuded of their natural mucus: and often perfectly healthy. Traces of bile in the intestines, or of any substance apparently descended from the stomach are exceedingly rare. Sanguineous congestion, and even active inflammation, are stated to be more common in the bowels than in the stomach; but on the other hand, instances are very numerous, where no such indications have been detected. The thoracic duct is stated to have been empty of chyle. The liver has been commonly found to be gorged with blood, but not always: it is an organ usually very vascular: and it would probably demand a nicer discrimination than has been bestowed on the subject, to distinguish the degree of congestion in which it is naturally left by the settling of the blood after death in ordinary diseases, from that which has been observed after an attack of cholera. The gall bladder has almost universally been found to contain bile, and in the great majority of cases, even to be completely filled with it. As is usual with this secretion in cases of retention, it is of a dark colour. Very different states of the gall ducts have been described: cases of constriction, and impermeability, seeming to be equally numerous with those of an opposite character.

The urinary bladder is found, we may say universally, without urine, and very much contracted. The lining or mucus membranes of the bladder and ureters, have been found coated with a whitish mucus fluid. The smallness of the bladder after death has been generally adduced in proof of great spasm: but it is not unfrequently found to be equally small after death from other diseases: and, it seems the nature of that organ, when it contains no urine to contract, so as to leave no cavity. Dr. Baillie, in his morbid anatomy, thus notices this fact. "The bladder is also found contracted to such a degree as hardly to have any cavity. This is generally not to be considered as a disease, but simply as having arisen from a very strong action of the muscular coat of the bladder previously to death." The appearance of the spleen, which is so various under the ordinary conditions of the body after death, has indicated nothing that can be mentioned as belonging to cholera. The vessels of the mesentery have been very generally found to be uncommonly full of blood.

In the head, appearances of congestion, and even of extravasation have been frequently observed; but, not so uniformly, nor to such extent as to require any particular notice. Only one case has been given, where the state of the spinal marrow was examined: and in that, indications of great inflammation were detected in its sheath: the case, however was, in some degree, a mixed one.

From this general view of the appearances found on the dissection of the bodies of persons, who have died from cholera, it is manifest, that the information thence derivable, is, in a pathological view, of a negative nature only. It is nevertheless, of consequence in a practical sense, especially in treating the sequelæ of cholera.

Explanation of the symptoms.

In attempting to explain the symptoms of cholera, it will be necessary to endeavour, to generalise them.

We have seen, that the natural functions are all in turn, disordered, interrupted, suspended: at the same time, it is obvious, that not one of these functions is found to be constantly and *invariably* affected by the disease. Of the vital functions, that of the heart and blood vessels may be stated *to be invariably* affected by it. That of the lungs may perhaps be presumed to be also constantly affected, inasmuch as, that it cannot be supposed to be performed perfectly, under the state of circulation which takes place in the disease. This inference is greatly strengthened by the appearance of the blood; by the livid colour of the body, in general; and, by the reduction of animal heat. The animal functions, as well those of the intellect, as those of voluntary motion, appear to be the least affected of any of the other functions. We have seen, that *serous membranes* are not necessarily affected in cholera; but, that *mucous membranes*, including the skin, which is of an analogous nature, *are* affected; and that this affection is, in some part or other, invariable. In order however to understand the remarks, which we have to make on this subject, it is necessary to explain what is here meant by the term *mucous membrane.* This distinctive appellation, as it is applied by Bichat, denotes those coverings of the body, of which one side is attached to some part of the body itself, and the other side is destined to be in contact with foreign matters, or such matters, as, though derived from the body, are invariably excrementitious. He connects the skin, which is the *exterior* covering of the body, with the membranes forming the *internal* coverings of all the open cavities and passages ; and he considers the latter to be merely a continuation of the former. Thus, the skin, and the lining membrane of the ears, orbits, nostrils, mouth, trachea, and lungs ; of the æsophagus, stomach and intestines, are continuous. A smaller surface is exhibited by the lining membrane of the urethra, bladder, and ureters ; of the vagina, uterus &c, continuous with the skin, but not *directly* so with the lining membrane of the other passages abovementioned. *Serous membranes,* on the contrary, are not naturally destined to come in contact with foreign bodies ; and they are not continuous with the skin. The affections of the skin and mucous membranes of the body, in cholera, are evidenced by a cold, relaxed condition in the former ; and in the latter by the state of the stomach and intestines, from all of which, a watery, or mucous discharge is largely poured out ; and by the state of the bladder and ureters, which are found to be coated with a mucus similar to that which is observed in the other passages. The fluid discharged at times from the bladder is almost always stated to be *limpid, colourless,* and in small quantity, leading to the inference that it may not be urine, but a mere watery exudation from the lining membrane. That the mucous membranes are affected, is farther evidenced by the moist state of the mouth, even under the most urgent thirst ; and by the state of the eyes, where there seems to be a peculiar secretion, or exudation, in the form of a film.

There is certainly no positive proof, that all the glandular secretions, as it has been very commonly supposed, are entirely suspended in cholera. The salivary secretion, for instance, has been presumed to be suspended, from the sensation of extreme thirst; but we have a similar sensation in ptyalism from mercury. The secretion of bile has been supposed to be suspended, from the absence of that fluid in the discharges ; but it appears that in almost all cases there is abundance of bile in the gall bladder : and in the accounts of dissections it is stated, that bile has been squeezed out from the pori biliarii, as if the secretion of that fluid had been going on. The secretion of urine has also been supposed to be suspended ; but the histories of many cases prove that either urine, or a fluid resembling it, has been voided, even in the worst cases of cholera. It is the concurrent opinion, however, of all medical men who have treated cholera, that the natural secretions, if not absolutely suspended, are, at least, very greatly interrupted. While the natural secretions are thus suspended, or interrupted, there are other discharges established, with the nature of which, we are not well acquainted. We have no chemical analysis of the fluid thrown out by the skin, the stomach, or the intestines; and we cannot say whether it be a morbid secretion, peculiar to the disease ; or, merely, an increase of a natural secretion. The discharge from the bowels has been thought by some to resemble, and, by others, actually to be, chyle. There is evidently, however, no chyle produced while the acute state of cholera prevails ; nor, are any of its elements present in the intestines : while the regurgitation of chyle from the thoracic duct, hinted at by some, is obviously impossible, on account of the valves of that organ. The discharges bear a strong resemblance to those taking place in some other diseased states. We cannot accurately distinguish between the cold sweat in cholera, and that which takes place in many disorders of the digestive organs ; nor, between the watery discharges from the stomach and intestines, in this disease, and those which occur in hysteria, and after excessive doses of neutral salts : neither does our present state of knowledge enable us always to distinguish between active, and passive excretions. If we could prove that the discharges in cholera were merely *passive,* arising from diminished energy of the vessels, we should make an advance towards its pathology.

According to these views, the symptoms of cholera may be explained by supposing a diminished energy of the nervous system, but especially of that part of it which supports the vital and natural functions. Hence, the spasms, or irregular muscular actions, found to occur equally in other instances of diminished nervous energy. Hence also the disorder in the stomach, arising sometimes from spasm of its muscular fibres, and sometimes from the loaded state of its vessels. Hence also the suspension of the digestive powers of the stomach; and its incapability of being acted on by the ordinary stimuli. Hence, also, the various affections of the intestinal canal, which so nearly resemble those of the stomach, that they need not be repeated. These symptoms, in a disease so highly congestive as cholera, will also be imputed, by some, to error loci of the blood. If red, or arterial blood be pressing on the origins of nerves we shall have undue action, and spasms; if black blood, the powers of the nerves will be diminished, or destroyed, establishing a state, resembling palsy. It may be considered as a proof of the *atonic* state of these organs in cholera, that no fœcal matter, no chyme, nor any appearance of digested aliment from the stomach, has ever been detected in the bowels; at least, none, which can be supposed to be formed while the disease existed in a decided form. With respect to the appearance of the gall bladder, it is generally considered as not being muscular; and, in the dead body, it is either found flaccid, when it contains but a small quantity of bile, or distended, when there is a larger quantity. Bichat states that it is not contracted according to the volume of its contents: but Dr. Baillie, in his morbid anatomy, observes, "The gall bladder is sometimes distended with bile, so as to be of nearly twice its usual size; at other times there is no bile at all in its cavity, and under such circumstances, it is white in its colour, and contracted into very small size." Bichat states, that the bile is caused to flow into the duodenum, by the stimulus of chyme passing the mouths of the ducts; that during hunger, or emptiness of the stomach, and during *gastric* digestion, little or no bile flows, it being then accumulated in the gall bladder; but that during *intestinal* digestion it flows copiously. If this be true, we may arrive at some probable reason for the general presence of this fluid in the gall bladder, and its absence in the intestines, in cholera. In the first place it has appeared, that no process, similar to digestion, goes on in this disease, either in the stomach, or intestines: hence, there is an absence of the wonted stimulus to the gall ducts. Again, as the majority of the attacks, are stated to take place in the night, or early in the morning, we see in this circumstance another reason why the gall bladder should be very frequently found filled with bile; for, in subjects, in whom the disease commenced at that period, the digestive processes were probably completed. The bile had therefore ceased to flow into the duodenum; it had begun to accumulate in the gall bladder, and to thicken, become darker, and more acrid there. Other causes of the retention of bile in the gall bladder no doubt exist. The biliary ducts have been observed to be almost impervious, from their spastic or constricted state, in the bodies of many subjects, who have been examined after death from cholera: and, although, in many other instances, the ducts have been found permeable after death, where yet the suppression of the bile had been equally complete, this appearance does not prove that they were not constricted during life. Spasm, or constriction of the gall ducts is therefore admitted to be a common cause of the retention of the bile: but, as we have shewn that this retention is almost universally the case in cholera; while the existence of spasm, in any part of the body, is certainly by no means proved to be a constant symptom, it appeared that some other cause remained to be assigned for it, which has thus been attempted. The urinary bladder, having strong muscular powers, may either suffer under the influence of irregular spasm; or, the mere absence of urine, for a certain number of hours, may be sufficient to admit of the diminution of its cavity by the natural contraction of its muscle, as already observed. The diminished energy, assumed, of the nervous system; accounts for the depressed state of the circulation, and for the depraved respiration; and we may suppose that these two functions are so intimately connected, that an irregularity of the one will affect the other. It is not however intended here to advance, that the suppression of the circulation, and the depravation of the function of respiration, stand in the relation of cause and effect. It is rather believed, that they both are effects of the *same cause*. We may also be justified in believing, that a spasmodic action takes place in the lungs in many instances, causing that extreme reduction in their volume, which has been so often observed after death. Whether a spasm of the heart or large vessels be indicated seems at least very doubtful. We must, notwithstanding, allow, even if the doctrine of diminished nervous energy be admitted, and the preceding positions, deduced from it, be granted, that we make but a feeble step towards a satisfactory explanation either of the symptoms, or of the ultimate cause of the disease. The assumed diminished energy of the nervous system is not easily reconcileable with the inordinate action in some parts, which apparently takes place in many cases of cholera: and it is not less difficult to understand, in what manner so many of the functions of the brain and nerves should be almost annihilated, while the intellect, and often the power of voluntary motion, should be comparatively little affected.

Predisposing causes.

All accounts agree in stating, that the young, the healthy, and the robust, are the least liable to cholera. The observation of a great proportion of our Medical Officers being confined to their practice in military hospitals, we have not sufficient data to determine, whether there be any peculiar liability to cholera in one sex, more than in another: but, if the preceding remark be well founded, it might be inferred, that the greater delicacy of females, and perhaps their greater tendency to nervous disorders, would give rise to a greater predisposition to it in them, than in males. Children are subject to cholera, but it has been observed, particularly in Mr. England's reports, that infants, who have been confined exclusively to the breast, are not susceptible of the disease. This remark, however, is to be received with reserve; as the paucity of that class of subjects in comparison with any other must obviously diminish the facility of forming a just conclusion.

It has also been very generally remarked, that people, who have been debilitated by recent disease, or by the remedies exhibited for its cure, and even while actually labouring under acute disease, are very susceptible of cholera. Patients under the full influence of mercury have been frequently seized with it: so have pregnant women. One attack of the disease, far from conferring immunity from a succeeding attack, seems rather to give a predisposition to it. In short, all the causes, which predispose to nervous and cachectic diseases, appear also to predispose to cholera; but it must at the same time be kept in mind, in estimating their effects on a population, that the poor and labouring people, who constitute the great bulk of mankind, are the classes chiefly exposed to these causes.

Remote, or exciting causes.

The remote and exciting causes, which have been assigned as capable of producing cholera, do not differ, generally, from those which are usually adduced in medical writings as the causes of most of our other diseases. Those chiefly insisted upon are, errors of diet, and sudden changes in it; vicissitudes of the atmosphere; the action of certain medicines; fatigue, exposure, depressing passions, and, in general, every remote cause of diseases of the class neuroses. It will readily be perceived, however, that most, or all of these causes have been in operation from the beginning of the world; and, as before remarked, are such, as the great bulk of mankind are exposed to in all situations on the globe. It is only during the operation of some other influence, therefore, that such remote causes can be supposed to have any effect. But, with respect to cholera, even during the apparent existence of this supposed influence, we have seen numberless instances, where, at the same place and time, most of the generally received remote causes seem to be innocuous.

For example, while cholera prevailed at Madras the labourers at certain public works, who were protected from the weather, who were well clothed, and fed, and who had no unusual work to perform, suffered from it severely; while a body of many hundred people, employed in digging, and clearing out the beds of stagnant, brackish, and extremely putrid waters, equally during the extreme heats of the season, as during cold and rainy weather, entirely escaped. This immunity is the more remarkable, inasmuch as many of them laboured during the night, for the purpose of preventing the accumulation of water, and were of course exposed, with very scanty clothing, to the utmost vicissitudes of heat and cold, and to all the exhalations, and depositions of the very tainted air, in which they worked. It seems easy to conceive, that the fatigue and exposure of a camp life in India, especially during wet weather, would be frequent causes of cholera: and, unquestionably, many of the marching corps have suffered from it severely: but, if we examine more narrowly into the matter, some considerations present themselves, which render the effect of these causes extremely doubtful. Two corps marching together, and apparently in every respect similarly circumstanced, do not always suffer equally. One gets the disease, in a violent degree, ten or fifteen days before the other: or, one is attacked, and the other escapes entirely. A corps marched some hundred miles, often under very adverse circumstances, without a case of cholera appearing: yet, where nothing new has occurred, nay, when all their external circumstances have greatly improved, cholera will break out with violence. Their route may be through a country, where cholera is not known amongst the inhabitants, and yet the corps suffers under it, and carries the disease along with them: or, the inhabitants of the country shall be suffering severely, and the marching corps passes with impunity. One corps will follow the track of another, which is suffering extremely from cholera, at the interval of a day or two, and yet will entirely escape the disease. One corps gets cholera on ascending an elevated country; another gets it on descending into a low country: one corps in a camp suffers from it, while the rest escape, or, one corps enjoys an exemption from the disease, while it prevails in the rest of the camp The food of marching corps, it is to be particularly observed, is always that of the country, through which they are moving; the supplies being provided for the day, at each stage.

It will be seen in the narrative, and in the reports, that cholera has appeared, and is equally virulent, during all states of the atmosphere, amidst all diversities of the surface of the country, and under every variety of the circumstances of the people. It seems however to be certain, that a corps under march, runs a greater risk of being attacked by cholera, than a corps in quarters: and, judging from all the circumstances, it would appear that to passengers, certain tracts, are more fatal than others. Hence much of the danger to a marching corps is to be found, not in the fatigues and privations of the journey, but in the risk of traversing an inauspicious spot. Cholera has been observed to prevail amongst a body of European recruits quartered in bombproofs in Fort St George, while not a case occurred in men of the same description, who arrived at the same time, and who were conducted direct to Poonamallee, or to St. Thomas's Mount; nor, in the party abovementioned, after their removal from the bombproofs to the Mount.

There is no instance on record, of a ship from Europe having a single case of this disease, until it has communicated with the land; but there are many examples of cholera appearing on board of ships sailing from the continent of India. In such instances, the precise periods, when the disease has appeared, are not in all cases known; but it is believed, that no vessel has suffered from it in a position much beyond the Southern Tropic. The instance of cholera stated to have been observed on board a vessel on the voyage from Europe, by Mr. Corbyn, in his Essay on this disease, is not conceived, on an attentive consideration of the symptoms, to be an exception to the truth of the preceding remark; Oedema is marked as one of the symptoms of the complaint, which appeared on board that vessel, and no such occurrence has ever been observed in the cholera of India.

Many instances are noticed, where cholera has supervened on the use of neutral purgative salts. The effect of these medicines bears indeed a strong resemblance to some of the appearances in cholera. The clear, watery, debilitating stools; the chill, and, in feverish subjects, the ague fits, which they cause, obviously point them out as unsafe, especially during the prevalence of this disease.

Cases of cholera, terminating in death, have occurred after drinking unwholesome liquors. An instance of this happened in a party of six men, who, after drinking together, were all seized with it, in consequence of which several of them died. Three men, having eaten, at the same time, the seeds of the coral plant, had all the symptoms of severe cholera. Large draughts of cold water have been often observed to occasion relapses, and are even said to have brought on the disease.

It is evident then, that the remote, occasional, or exciting causes, which have been assigned as capable of producing cholera, are no more specific to that disease, than to most other diseases; and therefore, that we must look for some other cause in explaining its appearance. This cause has been very generally expressed by practitioners in their use of the term, *epidemic influence of cholera.* We do not mean, however, to restrict the enquiry into the nature of this influence, to cases of *epidemical* attacks, properly so called; but, to consider the primary cause, either of sporadic or of epidemic attacks as being essentially the same: in the latter instance, it is merely thrown into greater activity by the co-operation of various circumstances, as is the case with many other diseases. By the term *epidemic,* therefore, will be understood merely a general but unusual operation of a specific cause.

The immediate cause of cholera, or, in other terms, the epidemic influence, will accordingly be naturally sought, either in the atmosphere, or in the soil and its productions, of those countries where it has prevailed; or, in a power sui generis, arising we know not how, but, having once arisen, capable of propagating itself, constituting what we term contagion, or infection. Each of these topics shall be the subject of consideration.

Influence of the atmosphere.

With respect to atmospheric influence, the general historical observations, which have been premised, tend to shew, that cholera has neither been confined to any particular period of time, nor to any particular tract of country; but yet, that it has been infinitely more prevalent at one time than at another, and in one tract of country than another. The narrative and original papers included in the present report, and the other publications on the same subject in Bengal and Bombay, all prove likewise, that cholera is capable of exerting its influence, undiminished, in every state of atmosphere, so far, at least, as it is evident to our senses, or determinable by instruments. Thus, we have now seen the disease continue for nearly seven years. During this time it has spread to China, and the Phillippine Isles, eastward; to Mauritius and Bourbon, southward; and to Persia, and Turkey westward. Our accounts do not enable us to say, that this range, wide as it is, constitutes the ultimate limits, to which the disease has extended or will extend. There is no information, which can be relied upon for fixing its progress, hitherto, to the colder regions of the north. Although, however, cholera seems to have arisen, and to have been sustained and spread, despite of all sensible states and changes of the atmosphere, its march over the face of the country, has, nevertheless, been singularly uniform in certain lines of its progression. Instances of immunity from its attacks, in towns and villages situated in, or near these lines of its progress have been, at the same time, frequent and striking.

We are thus furnished, on one hand, with arguments to prove, that the cause of cholera exists in the atmosphere; and, on the other hand, with no less powerful reasons for thinking, that the morbific influence may be something arising from the soil, not generally and equably diffused through the air. Ships arriving in the Indian seas ought to suffer under the epidemic influence of the air, if such influence really existed; but, it is certain, on the contrary, as already stated, that no instance has ever been recorded of the crew of a ship suffering from cholera, until the vessel had come into communication with the land.

There seems no reason to believe, therefore, that the cause of cholera, if it exists in the atmosphere, will ever be detected in any particular state of its sensible qualities. An investigation into the proportions of its natural constituents would be equally fruitless; at least, if we may be allowed to judge from the attempts made with similar views in many other instances of epidemics, which have invariably failed in throwing any light on the subject. If the epidemic influence really exists in the atmosphere, it can only be referred in general terms, we apprehend, to the presence of some substance or quality of a deleterious kind, with which it has become impregnated, which has at all times escaped detection by the senses of men, and has been felt only in its effects.

In order to afford the most ample information respecting the phenomena of the weather, and their effects on the health of the troops, a series of Meteorological tables, and of tables of diseases, from the year 1815 to 1821 are given in the Appendix. A certain intemperature of the atmosphere may perhaps be inferred from the results of the tables of diseases; but its nature will not, it is apprehended, be very readily discoverable in the sensible changes of the weather. The following appears to be the average proportion of sick, compared with subjects in health, exclusive of fractions.

	Proportion of European sick to well, in one year.	Proportion of Native sick to well in one year.	
1815	158 per centum	60 per centum	
1816	142 „ „	60 „ „	
1817	166 „ „	70 „ „	
1818	204 „ „	84 „ „	
1819	199 „ „	94 „ „	
1820	184 „ „	81 „ „	
1821	182 „ „	60 „ „	
1822	164 „ „	48 „ „	Not in the tables.
1823	163 „ „	48 „ „	„ „ „

These numbers *include* the cases of cholera. If the cases of cholera, *be excluded*, the proportions will be as follows.

	Europeans.	Natives.
1815	158	60
1816	141	60
1817	165	69
1818	189	78
1819	190	88
1820	180	77
1821	178	57
1822	157	47
1823	160	47

The general health of the european troops would appear to be restored in 1822 and 1823, nearly to what it was in 1815 and 1816. The increase of sickness in 1817, is about 15 per centum; but in 1818 to 1821, the increase, independently of cholera, is very considerable, and is not to be explained by the movements of troops during these years. The general health of the native troops appears to have been considerably meliorated in the last two years; while a remarkable increase of sickness, independently of cholera, has prevailed among them, coincident with that in the european troops. By a reference to the meteorological tables it will be seen, that the mean altitudes of the barometer and thermometer never differ, in a degree at all important, one year with another, from 1815 to 1821; according to the note at the end of the tables for the year 1820, the barometrical mean of the five years, from 1815 to 1820 corresponds exactly with the mean of the five preceding years; and that the thermometrical mean for the same period only differs by a degree and a quarter The principal variations distinguishing the years 1817 and 1818, are to be found in the quantity of rain, and the direction of the winds*—How far we are to connect cholera with these phenomena must be judged of with careful reference to the mode of its progress through the Peninsula. In 1817, the disease did not appear. In 1818 it appeared in the most northern parts. In some places, the weather was then wet; in others, dry; in some, the usual periodical rains were prevailing. It progressed in all situations: and it had not extended to the southernmost points till 1819, when the irregularities of the preceding seasons might be concluded to have lost their effects. After the seasons have been restored to their wonted regularity, and, more latterly,* after a completely opposite state to that of 1818, has prevailed, to wit, a season of unwonted drought, owing to the failure of the rains of the N. E. monsoon, cholera has still unhappily continued to prevail: sporadically, in all parts, and in the instances of many marching corps, epidemically, and with much severity and mortality. If the irregularity of the seasons in 1817 and 1818, therefore, have given rise to cholera, we apprehend it can only be in an indirect, and to us, an unknown manner; and its continuance, after having once originated epidemically, appears to be unconnected, in the main, with any sensible state of the weather.

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* See remarks page 24 of the Narrative.

Influence of electricity.

A change in the electricity of the atmosphere, especially a diminution of it, has been assigned as the immediate cause of cholera; and, from the ability and perseverance, with which the theory has been supported, it merits particular attention. According to Mr Orton's theory, which supposes a diminution of electricy, that fluid is the great agent of life; the primum mobile of the brain and nervous system The functions of these organs are said to consist in a certain influence which electricity, in some sort of combination with them, and constituting what he denominates the *neuro-electric fluid*, is supposed to exert. It follows according to this hypothesis, that every change in the electricity of the atmosphere is instantly productive of great effects on the living system; at least, this is admitted by Mr. Orton: for, he says, "if a deficiency of electricity in the air, which is breathed, be proved to be absent in a single instance of a general attack, the theory must fall to the ground." Now, though we have certainly not been able to ascertain by experiments, the precise electrical state of the atmosphere during attacks of cholera, it is sufficiently manifest, that the disease has raged with equal violence under every sensible condition of the weather: and in fact, a great number of the attacks have taken place, when the sky was clear and serene, and when every appearance indicated an undisturbed state of the electrical fluid. But, if a deficiency of electricity be the true and sole proximate cause of cholera, which the theory upholds, it seems objectionable to limit its influence to epidemic attacks: for each individual case, whether sporadic or otherwise, must be equally the effect of this proximate cause. Sporadic cases have, however, been too numerous, and too uniform in their occurrence, for some years past, to warrant the conclusion, that they are connected with any particular state of the electricity of the atmosphere.

Admitting, however, that electricity is a great and powerful agent in Nature's inanimate works, it does not follow, that its influence equally pervades the animate creation. May we not ask, is such an agency either safe, or in consonance with the general laws of nature, as far as we can comprehend them? If the *principle of life* depended on a power so mobile, so variable, and so destructive as electricity, would not every living creature be in perpetual danger? Do we not, on the contrary, observe, that the Creator of the Universe has made the living body most wonderfully insusceptible of such influences as are naturally much subject to variation; and that those materials which can be considered as forming the elements of its existence, are provided with a steady and unfailing hand. The electric and galvanic fluids are certainly capable of mimicking some of the properties of the living principle, when they are applied to the nerves; but, mere irritation of these organs by hard substances, produces similar phenomena. The living body may be negatively electrified, as well as positively, without suffering more inconvenience in one case than in the other. Instances are frequent of men and animals being even struck down by lightning, and remaining stunned for a time, without experiencing any permanent injury. The animal frame, therefore seems capable of resisting very great changes in the quantity of electricity. It has been said, indeed, that the electrical fluid evolved by machines *may* not be the same as natural electricity : but we might as well say, that the heat extricated in combustion is different from solar heat. Mr. Orton admits, that the living body is scarcely affected by the greatest changes in the pressure of the atmosphere; and that its power of resisting heat is altogether wonderful.

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* 1823-24.

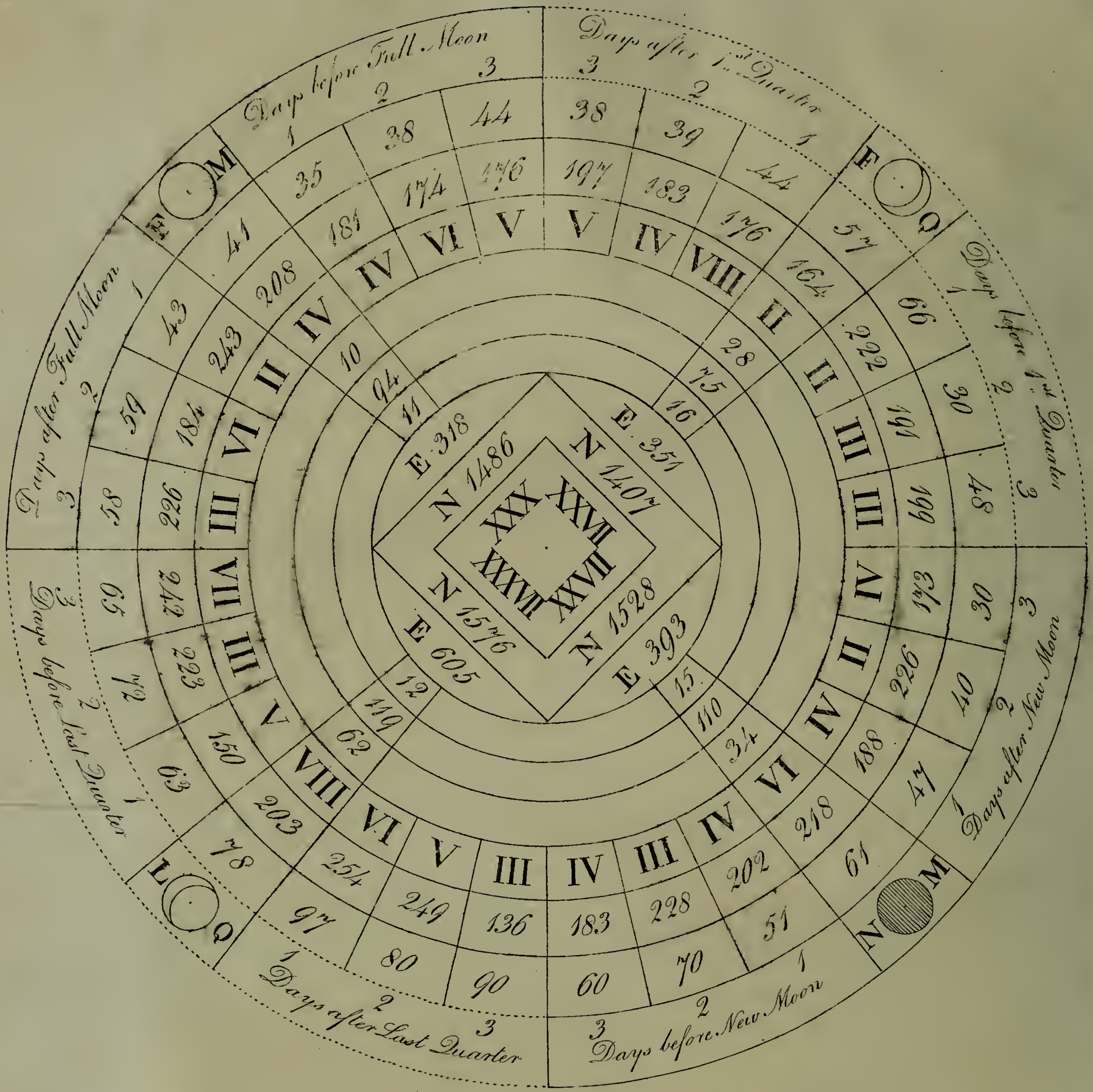
Oxigene is essentially necessary to animal life : and we see, that of all the products of nature, none is so invariable in its presence, and its proportional quantity, as oxigene : it may be said, indeed, in these respects to be immutable. From this arises the inference, that its presence *in a fixed proportion* is necessary to animal life. Heat is necessary to life, but not in *a fixed proportion*. In the torrid zone, where this principle abounds, all nature is alive. The air, the earth, and the waters teem with life. As we approach the regions where heat ceases to be manifest, life also ceases to exist. Let us consider electricity. In those warm regions of the earth, where life is most abundant, this element is certainly not more plentiful than in more temperate climates : and far from being deficient in those frigid regions, where no living thing exists, it there seems to abound in profusion. May we not, therefore, conclude, that whatever is essentially necessary to life, is either supplied in fixed, and invariable proportions ; or, the living body is rendered capable of existing under an almost infinite range of proportions, and of sustaining changes with impunity. Were electricity the principle of life, and were changes in its quantity so noxious as has been alleged, the great Author of the universe would doubtless have made it more uniform : and we may conclude, that so powerful, so unconfinable, and so variable an agent, whose powers shake the globe itself, is yet in ordinary circumstances, by the wisdom of the Creator made innocuous, and of no effect on the living body.

Mr. Orton has supported his theory with much ingenious reasoning on the connection between the state of the barometer and the electricity of the atmosphere ; and between sol-lunar influence and electricity : and he has arrived at the conclusion, that whenever cholera prevails, the weather will be broken, the electricity will be diminished, and the barometer will likewise evince a lessened weight of the air. So far as respects the fall of the barometer being connected with a broken state of the weather, as imagined by Mr. Orton, it is quite certain, that, in this country at least, these circumstances are not coincident. On the contrary, the barometer is uniformly highest during our rainy season, in the Carnatic, and for several months after : and it is uniformly lowest during our hottest and driest weather. The fact seems to be, that northerly winds, raise the mercury in the barometer, and southerly winds depress it, here, as in all other parts of the northern hemisphere. In the Carnatic, the monsoon rains fall with a north, or northeasterly wind, and the mercury in the barometer then begins to ascend : but it ascends equally in other parts, where the same wind is accompanied with dry and cold weather. In all other parts of India the rains fall with southerly and southwesterly winds ; and the mercury in the barometer then falls : but it falls then in the Carnatic also, though under a totally opposite state of atmosphere.

Sol-lunar influence.

Sol-lunar influence, as an exciting cause of disease, has, at various times, greatly occupied the mind of the pathologist : and it has, in connection with electricity, been much insisted upon as a cause of cholera, by various Medical Officers ; by none more, than by Mr. Orton. With the view, therefore, of arriving at as accurate a conclusion as possible on this interesting subject, a reference has been made to the registers of sick of this army, in which the admission of every patient into hospital is accurately recorded. From these registers, the daily cases of cholera, for a period of about two years, have been carefully extracted, and they are exhibited in the "Diurnal Tables" in the appendix. The tables likewise contain a column shewing the phases of the moon. The invasion of cholera being extremely sudden, and the time of attack being thus distinctly marked, no other disease could afford greater facilities in the proposed enquiry, as far as it respects individual cases. In the diurnal tables there is no notice of the epidemic invasions, farther than that which is necessarily implied by the number of attacks recorded on each day ; but very accurate information on this

Diagram intended to illustrate the relations of Sol-lunar influence with Cholera.



EXPLANATION OF THE DIAGRAM.

This diagram exhibits the dates of admission into hospital of 1667 Europeans, and 5997 Natives, furnishing the cases of Cholera which occurred during the period of 28 lunar months. It also exhibits the dates of the commencement of about 121 epidemic attacks of that disease at different stations. These dates, in each instance, are expressed in reference to the phases of the Moon.

The first circular line shews the principal phases of the Moon, viz. the full and change, and first and last quarters, with the three days before, and three after each. The 2d line shews the number of Europeans, and the 3d line, the number of Natives taken ill on each day. The 4th line shews, in Roman characters, the number of principal epidemic attacks on each day. As there are only 28 divisions in each annular space of the diagram, and consequently, no divisions for those days which were supernumerary to 28, and which, by the method followed in constructing the diagram, always fell immediately *before* new and full moon, and first and last quarters, the cases of Europeans and Natives entering on those days have been thrown into the 5th and 6th lines, the aggregate of the supernumerary days being given in the 7th line. The total numbers of each quadrant of the diagram, are expressed in the central subdivisions of each, respectively: E-designating the European; N-the native cases; and the Roman characters denoting the epidemic attacks.—It is obvious, from this description, that the dates exhibited in that portion of each quadrant which precedes the place of the principal phases, cannot be quite correct, on account of the occasional intervention of the supernumerary days.

subject will be found in the narrative, and in the original Reports. The sum of the information to be derived from all these sources, we have attempted to throw into the form of a Diagram, after the manner of that published in Mr. Orton's separate work on cholera. The individual cases of cholera, exhibited in this diagram, amount to 7,664; and of these, it appears, that 3,725 were admitted into hospital during the quarters of the new, and full moon, which, according to Mr. Orton, are the *morbific* periods; and 3,939 were admitted during the first and last quarters, which according to that author, are the *non morbific* periods. Thus, between the *morbific*, and the *non morbific*, there is only the difference of 214 cases in 7,604, and the excess lies on the side of the non morbific. We may hence safely conclude, that cholera is not directly affected, in individual cases, by sol-lunar influence. The increase in the admissions, especially of Europeans, which is exhibited in the last quarter of the moon, a *non* morbific period, may be referred to the unsettled weather, which generally prevails at that time, operating as an occasional or remote cause. It remains, however, to be shewn, whether the general attacks, or epidemic invasions of cholera, are influenced or not, by the moon; and this subject presents some difficulties, from which the consideration of the individual cases is free. The commencement of an epidemic invasion should, perhaps, be computed from the date of the *first case* of the series which is comprised in the attack; as we may suppose that *then*, the morbific influence began, and that those subjects who were most predisposed, soonest manifested its effects. But it is not possible always to distinguish between sporadic cases, and those really forming the commencement of a general attack: and some very remarkable instances of sudden aggravations have been observed in the course of such attacks, which would seem to indicate some new influence. The reader will find the materials, on which the computation of this part of the diagram was founded, in the narrative and original reports. The results of the examination, as exhibited in roman characters in the 4th line of the diagram, tally very closely with that of the individual cases in the 2d and 3d lines. In the *morbific periods*, or the quarters of the new, and full moon, we find 57 beginnings of epidemic attacks; and in the *non morbific* periods, or the first and last quarters, we find 64 beginnings. Thus, as in the individual cases, the admissions were most numerous during what has been styled the *non* morbific periods, so also the commencements of epidemic attacks have been most frequent during these periods; the difference being 7 out of 121 visitations. We may hence conclude, that cholera is not affected by sol-lunar influence, either in individual cases, or in epidemic attacks.

This subject would not have occupied so much attention, but for the great importance, which has been attached to it by various Medical Officers. Mr. Orton has, especially, dwelt upon it, both in his papers which appear in this report, and in his separate publication on cholera. In proportion, therefore, as that author is entitled to our respect, founded on the great extent of his researches, and the acknowledged respectability of his talents and acquirements, so it behoves us to examine, with scrupulous care and circumspection, opinions that go forth recommended by his authority.

Influence of the soil.

We have few observations to offer regarding the influence, which the soil might be conjectured to have in the production of cholera. The sudden, unaccountable, and insulated nature of many of the attacks have led to surmises respecting the possibility of certain noxious exhalations having arisen from the ground, but these surmises are not founded on any facts or experiments.

Influence of deleterious articles of food.

Much has been said and written respecting the agency of a deleterious article of food supposed to be the exciting cause of cholera, namely rice, of a certain quality, known by the term oose rice, and denounced by Dr. Tytler, of the Bengal Establishment, as the sole cause of the disease. The doctrine has been supported by its author with great spirit and perseverance: but it appears to have aimed at too much, and to have rested on grounds, which, in the progress of the disease, became manifestly untenable. The author of the theory having advanced that noxious rice was the sole and exclusive cause of cholera, to which disease the name of morbus oryzeus was accordingly applied, his opponents appeared satisfied, when they could disprove the general fact, by shewing examples, where the disease occurred without rice being used; and did not carry their consideration to the question, whether other grains might not have acquired similar deleterious powers. Dr. Tytler complains, that his views have not met with that liberal and candid consideration, which an attempt to elucidate so important a subject certainly merits. This is the more to be regretted, since the theory, which refers the disease to the action of poisonous food, appears plausible, and all the symptoms might probably be accounted for with tolerable facility by it, provided we could prove its truth in general. The first objection to the supposition that cholera is caused by bad food is naturally that, which arises from the mass of people eating, without bad effects, the product of the soil, whereon they live, or the supplies of their markets drawn from more distant quarters. It seems impossible, that one person shall be immediately poisoned by eating that, which those around him eat without inconvenience. If we attend, however, to the astonishing effects of the ergotted rye, though we may not be able to explain or comprehend the matter, we shall see, that the food which nourishes one person, for a time at least, with comparatively little bad effect, will cause in others a morbid change in the body, through which their limbs absolutely become dead, and drop off! The arguments hitherto brought against the supposition of rice being the cause of the disease are, therefore, not quite conclusive, except that it may be affirmed not to be the sole, or even a *common* exciting cause of cholera. The subject of the influence of unusual seasons on the food of man, and also on the waters of the earth, is, nevertheless, highly deserving of attention.

The replies to the queries, addressed by the Medical Board to the Surgeons of the 41st and 54th Regiments respecting the use of rice, (page 233) may be considered as conclusive against the fatal attacks of cholera experienced by these corps being in any way connected with it: but as the men might have, and no doubt had, opportunities of eating other products of the Indian shore, from the time the vessels came to anchor in the roads of Madras, it will be proper, in this place, to consider the subject a little more closely.

The crews of vessels, and the Troops on board, have not, as we have already seen, ever experienced an attack of cholera, till they had communication with the shore. It is not known what has been the earliest period after reaching an anchorage, at which cholera has occurred on ship board; but, in the instance of the 2d wing of the 41st Regiment, men were attacked on the very morning of their landing, which was the second after their arrival in the roads. It is believed that the crew of that vessel, the Asia, did not suffer from cholera. The crews of the Thomas Coutts and William Fairlie, though put immediately on fresh provisions, did not suffer from the disease until a considerable time after the troops, which had disembarked from them, were attacked; and then, it was not so generally prevalent amongst the crew, as we might have expected, had the cause existed in their food. Regiments, marching, are supplied at each stage with the same articles of food, which are to be procured in the markets of the respective villages: but we find, that cholera has appeared amongst them, when it was unknown to the people of the tract in which they were at the time: or, it has raged amongst these people, without appearing among the troops. One body of men following another, sometimes get the disease, when their immediate precursors escaped it; or, the former escaped it, when the latter suffered most severely. Yet all have subsisted on the same food. When the disease is once established in a corps, it runs its usual course, although, by continuing the march, the corps has, in the mean time, moved far from the country and its supplies, where cholera first appeared. Again, if this disease depended in an especial manner on the food, all new comers, should, ceteris paribus, be equally liable to it in the proportion of their numbers; but nothing can be more contrary to experience than this. There is a very curious notice of the possible effects of bad water in producing cholera, in Mr. Cruikshank's report, page 237. This leads directly to the enquiry, at what period from the application of the cause, cholera usually appears, and what are the limits of its operation. We have abundant ground for belief, in all the reports on the subject, that the period of its appearance, after the application of its cause, may be, and very often is, extremely short: nay, almost momentary. On the other hand, there are circumstances, which lead us to believe, that this period may be greatly protracted. A Ship, for instance, leaving an Indian Port, has sailed as far south as the Equator, without having a case of the disease. It then suddenly appeared with great virulence and mortality, and all the susceptible men, as it would seem, having suffered in the course of two or three days, the disease has immediately and finally ceased. It is stated by Mr. Duigan of the 89th Regiment, that a field force having embarked at Bombay for Malwan on the 13th January 1819, he was called on the 14th, to visit, on board one of the small vessels conveying the troops, an artillery man, who had been seized with cholera. On the 15th the force landed : and this party of Artillery furnished two more cases on that day, and two on the 16th. All these five men died. On the 17th several slighter cases occurred ; but they recovered. The disease ceased : nor did it affect any other individual of the force. These instances are selected ; because, being at sea, we may conclude, that the men were not exposed to the same exciting causes, which usually affect bodies moving by land. The idea, therefore, that the men of the 1st battalion 9th regiment may have suffered attacks of cholera from drinking bad water at Cunnatore, as Mr. Cruikshanks has mentioned, is not absolutely invalidated by the circumstance of the disease having appeared successively, and at a certain interval after having drank the water.

To enter into the consideration of the miasma, which may be supposed to contaminate the atmosphere, and so become the exciting cause of cholera, would lead us into a discussion of the doctrines of epidemics and endemics in general : but this is a subject so little understood, and resting on data so extremely uncertain and undefined, even in the cases which have longest occupied the attention of mankind, that to attempt any illustration of the pathology of cholera from it, would be fruitless. An attentive consideration, too, of the history of cholera will shew, that many of the circumstances connected with it are peculiarly unfavorable to the opinion of miasma being the cause of the disease.

Contagion or infection.

It only remains to consider the subject of contagion, or infection, as relating to cholera. In entering on this part of the enquiry, we must greatly lament the absence of fixed and acknowledged principles, by which the various circumstances connected with it could be estimated There is, however, as respects cholera, another difficulty, which is not felt in discussing the infectious or contagious nature of any other disease. It is this; if, as our reason and experience lead us to believe, it is a disease of the class Neuroses, our knowledge, of the laws of infection or contagion drawn from the study of the diseases of the pyrexile class, limited as it is, may not be fairly applicable to one of so opposite a nature. In judging of an infectious quality relative to cholera, it is likewise necessary to keep in mind, the suddenness of its attack, and the extreme rapidity of its course ; the former instantly arresting the locomotive powers of the individual subjected to it, and the latter contracting, to a very circumscribed period, the faculty of producing, if it does produce, infectious matter. Now, in many infectious diseases, the individual affected retains the power of moving to a distance before the developement of the disease : and, during its progress, he possesses the power of contaminating those who approach him, during a much longer period than can be the case, in general, with patients in cholera.

If this question could have been decided simply by the opinions of a majority of medical men, it would already have been set at rest against the doctrine of contagion or infection : for, there are perhaps few subjects on which so little diversity of sentiment has existed. The grounds of these opinions, however; have not been very accurately explained, and, where they have been detailed, they have been combated by those practitioners, few indeed in number, who have entertained opposite views. It is, therefore, necessary here to enter, somewhat at large, into the consideration of the arguments which may be adduced on either side. In order to obviate any misconception of the import of the terms contagion and infection, it will be proper briefly to explain the precise meaning in which they are employed, in the following observations. By contagion, it is meant to indicate the communication of disease from the body of one person to that of another, by actual contact. By infection, it is meant to indicate the communication of disease from the body of one person to that of another, through the medium of the atmosphere, without actual contact.

It is not contended by those, who embrace the doctrine of infection, that cholera has not arisen spontaneously, as well at the present as in former times ; nor is it considered that this circumstance affects the question. We see that various other diseases, generally admitted to be infectious, also arise, to all appearance, spontaneously ; at one time, without spreading as an epidemic ; at others, appearing to possess the power of doing so, in an eminent degree. We are confessedly ignorant of the circumstances, under which these phenomena take place.

It is further contended, that there are very great differences in the respective infectious or contagious powers of different diseases ; and that the laws, which govern epidemics in general, are not sufficiently understood to enable us to pronounce, whether their spread depends or not on a cause of an infectious or contagious quality.

It appears immaterial, whether the causes of the epidemic cholera in 1817 were limited by narrow or extended boundaries. The true objects of enquiry would seem to be comprehended in the following queries. Has the disease spread over countries, which, in respect to climate, and soil, and population, were previously under different or opposite circumstances from those of the country where it began ? Can it be shown, that the circumstances of the countries, which it subsequently pervaded, were, by a gradual change, assimilated to those of the country, in which it first appeared? Is it manifest, that its prevalence in new tracks has been increased by the occurrence, during its progress, of new causes connected with the circumstances of the country or climate, which yet were insufficient for its original production there ? Have we sufficient evidence to decide, that cholera has, in any instance, or under any circumstances, been produced by personal intercourse, or, by actual contact ? It is not the object of the present report, however, to enter minutely on such an extended enquiry ; but, in connection with the Reports of the other Presidencies, to attempt to afford grounds for doing so.

Cholera has gradually spread from the central parts of Bengal to all the adjacent countries. Though it may have appeared nearly simultaneously in many parts of Bengal, situated at considerable distances from each other, yet its progress beyond that tract has been uniform and progressive. We have seen this fully exemplified in the progress, which it has made during the space of five or six years ; it having, in that time, reached very distant countries, and left no interjacent countries untouched. In respect to the Peninsula of India, which is more immediately the object of this report, the narrative, and the map prefixed to the work,* will clearly evince, that the progress of the disease, from North to South, has been affected with surprising regularity both geographically and chronologically: for, any deviations, which may appear to have taken place in the regularity of its march, in regard either to place or time, may, with some probability, be referred to the intervention of cross roads, or to the interruption of regular main roads ; and to the effects of the prevalent winds. For example, its progress during the S. W. winds was slower from Ganjam to Nellore, than it was from the latter district to the remaining southern portion of the coast, after the wind had set in from the N.E. Even admitting that insulated cases of cholera have appeared in some places, before any had happened immediately to the northward of these places, it would be but reasonable to view them as sporadic, since they have been shewn at all times to have occurred, and to be in fact endemial in the climate of India. The wide and uniform diffusion of cholera, which we have witnessed, has taken place over countries bearing little or no resemblance to that where it originated : and their climate and seasons, especially, have been altogether dissimilar. It may consequently be inferred, that the disease has either been propagated by infection or contagion ; or, that its progress is owing to circumstances beyond our knowledge, thus ranking cholera amongst many other epidemics, the causes of whose origin and progress are equally unintelligble and unknown. The latter conclusion obviously leaves the question of the infectious or contagious quality of cholera undecided. The supporters of that theory object to the occult or unknown circumstances alluded to, being resident in the atmosphere, forming what might be termed its choleric constitution : for, they observe, the disease, in that case, could not make any sensible progress directly against the continued and violent monsoon winds ; nor could villages nor tracks of land escape the disease, where all around them were suffering from it. They confirm these arguments by the following facts.

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* The map has been engraved from a drawing prepared, under the authority of Government, by the Deputy Surveyor General : the engraving has not done justice to the drawing. The course of the epidemic cholera in 1818-19 is marked in red lines along the principal roads, and nearly in the order which is followed in the first twelve pages of the narrative—The cross roads and others, which are incidentally mentioned in the rest of the narrative, are marked by yellow lines.

Bodies of troops in motion have been attacked, and have retained the disease, while it was unknown to the fixed inhabitants of the country, through which they passed : one, of two corps in a camp, has been attacked and the other has escaped the disease. Ships arriving from other parts of the world have never suffered under the assumed epidemic constitution of the atmosphere, before reaching the shore. They further urge, that the supposition of a power, not infectious, existing in the air, which is capable of producing the disease, is purely gratuitous ; and has been shewn to be hardly reconcileable with our acknowledged experience. Diseases avowedly infectious, such as small pox, measles, &c have not, at all times, the power of spreading epidemically : for, while it is certain, that their exciting causes are never wholly extinct, it is only at particular periods, that these diseases become epidemic : but, we are not acquainted with the circumstances, under which this power of epidemic propagation arises. The same may be the case with cholera, though the causes of its epidemic diffusion would seem to occur only at very lengthened intervals. All the atmospheric phenomena, and other circumstances brought under the head of occasional causes, have, with little or no interruption existed, from the beginning of time, without producing cholera, except at those particular periods. Consequently, the superaddition of a new cause must be inferred. Such are the arguments, which the supporters of the doctrine of infection or contagion have derived from the general appearances attendant on the rise and progress of cholera.

The *particular* evidence that cholera has been propagated from place to place, or from one body of men to another, or one individual to another, it must be admitted, is attended with many difficulties. There are several instances recorded, where cholera has been first manifested at a place, in the attack of an individual, who had come from some other place, where the disease existed. The first case of a European, which occurred at St. Thomas's Mount, was that of a man, who had left Madras on the morning of the 15th October. Proceeding on his journey towards Trichinopoly, in the evening, he was taken ill about a mile from the Mount, brought back to the house, where he had passed the day, and there died. On the 17th, the wife of that person ; on the 19th, the owner of the house ; and on the 21st, *his* wife ; all experienced attacks of cholera, but recovered. Several of the native servants also suffered. The instances of the disease appearing at places immediately after the arrival of corps and detachments, which were suffering from it, are very numerous. For example, it appeared at Jaulnah immediately after the junction of a party from Nagpoor, amongst whom it prevailed. It appeared at Aurungabad, and at Malligaum in Kandeish, after the arrival of parties, who had left Jaulnah at the time the disease was prevalent there, and amongst whom it had broken out on the march to these places. It appeared a second time at Malligaum after the junction of the 1st Battalion 5th Regiment, in which cholera prevailed. It appeared at Secundrabad after the arrival of a detachment suffering from it; and it appeared, afterwards, in the villages, through which the detachment had moved. It appeared at Gooty, where no case had been observed for six months before, immediately after the arrival of the 1st battalion 16th regiment, in which it prevailed with great mortality. It is remarkable, that the same formidable type of the disease, which prevailed in the marching corps, was communicated to the corps at Gooty. It also spread, on that occasion, to the adjacent villages. It appeared in a detachment of Artillery, previously perfectly healthy, upon their encamping on the ground, which had been, immediately before, vacated by the 1st battalion 8th regiment N. I. in which corps the disease prevailed: the bodies of several persons, who had died of cholera, remained exposed on the ground, when it was taken up by the Artillery. Moreover, marching corps and detachments have been seized with cholera, on coming to places, where it was prevalent.

The following extract of a letter from the Collector of Bellary, deserves to be noticed. " It (cholera,) first made its appearance in the neighbourhood of Gooty, where the 2d battalion 1st regiment N. I. which had suffered severely from this disease, halted for some time; it subsequently appeared in nearly every village on the route of the 15th regiment N. I. which was also severely attacked by the cholera, as it passed through this district, and which halted at this station till the disease disappeared: in some of the larger villages, such as Dhurmaveram, it has carried off nearly 200 souls." " Doubts may be entertained of the contagious nature of the disease; but it appears to me quite certain, that the infection has been communicated, or created here by the two regiments before noticed; the disease was unknown here until they arrived; it broke out where the first diseased corps halted for some days, and at nearly every village at which the other stopped; it has been unknown in any other part of the district; and though it was unknown both in the 15th N. I. and in the villages through which it passed, until they arrived in this district, it no sooner broke out among that body of men on march, than it communicated itself to the fixed residents who were before exempt from it."

When cholera appears in a street, it has frequently been observed to pervade almost the whole of the dwellings in it; and, when it appears in a family, to affect several of its members successively. Cholera has been remarked to have travelled chiefly by the great roads, affecting the villages on either side of it, without perhaps extending to those situated at any considerable distance. The 6th regiment of cavalry having left Ellore, where cholera did not exist, arrived at a place where it prevailed; and a squadron of the regiment having been necessitated, from the loss of their tents, to take possession of an old Pagoda in the village, for shelter, cholera broke out in the corps at that place; and this squadron furnished almost every case of it. The prisoners, in a jail enclosed with a high wall, have escaped cholera, while it prevailed all around them: and the inhabitants of certain hilly ranges have also escaped the disease. These have been said to have interdicted all intercourse with the people below. When cholera is once established in a marching regiment, it continues its course in spite of change of position, food, or other circumstances. Its approach to a town has been traced from village to village, and its first appearance in the Town has been in that quarter, which was nearest the track of its progress. For instance, it approached the town of Salem from the west, visiting all the villages on that road. It was some days in Shevapett, situated a quarter of a mile to the west of Salem, before it appeared in Salem itself: and it was several days in passing from Salem to Amarpett, three quarters of a mile eastward of it. Mr. Superintending Surgeon Duncan states, that when cholera appeared in the 34th regiment, on the route from Bellary to Bangalore, all the villages, which they passed, suffered from it immediately afterwards: and a native soldier, travelling from Bangalore to Nundidroog, at neither of which stations cholera had appeared, passed through the camp of the 34th regiment while the disease prevailed, was attacked by it, and died shortly after reaching Nundidroog.

The sudden appearance and disappearance of cholera, however unlike the progress of known infectious diseases, is not admitted as being irreconcileable with the doctrine of infection; especially if the disease be of sudden invasion after the application of the exciting cause.

The evidence, which has been adduced in favor of the infectious or contagious quality of cholera, as it respects the intercourse between individuals, may be thus stated. The relations, who have attended on people ill of cholera, as well as the nurses appointed in military corps for that duty, and, in general, those whose employment has led them to be much with the sick, have been observed, in very many instances, to be attacked with cholera during or shortly after their attendance. For instance, a soldier's wife is taken ill and dies; her friend in attendance is also taken ill, but recovers; while the husband of the former, is seized the same day at noon, and dies in the evening. Many such examples might be produced. The sick in hospital labouring under other diseases, have likewise been observed to be attacked with cholera, especially those who lay near the patients ill with that disease. Sometimes whole families have been swept off successively. Servants have often been observed to sicken after attending their masters. The instances, however, above recited, are by no means uniform: they are indeed opposed by directly opposite experiences: but it is contended, that a greater proportion of people, occupied as above described, have been attacked with cholera, than has been observed to be the case, in an equal number of people, who were not employed amongst the sick. It should be remembered also, that medical men, and hospital dressers and servants, being inured to the contact of sick, are less liable, on that account, to receive infection. The exact number of Medical Officers and Servants, who have experienced attacks of cholera, during the prevalence of that disease in the Hospitals at which they officiated, cannot be ascertained. It is known, however, that thirteen Medical Officers of this establishment have died of the disease; and that between fifteen and twenty suffered attacks of it, but recovered; in perhaps every instance, the officers had been previously engaged with patients under cholera. The circumstances of some of these attacks are very remarkable. The Medical Officer, in repeated instances, has been the only european in the corps or station, who has suffered. Dr. Daun and Mr. Assistant Surgeon Gray, of H. M. 89th regiment, were both seized with the disease, after intimate intercourse with the sick; and the two friends, who attended the latter, during his severe illness, were also seized, while no other european officer of the corps suffered.

It has been already observed, that by far the greater number of medical men concur in the unqualified opinion, that cholera is not an infectious or contagious disorder: and they conceive, that the phenomena of its origin and progress can be more satisfactorily explained by the laws of epidemic diseases in general. They observe, that there has been a marked intemperature of the seasons, preceding and accompanying its appearance: and they assume, that a certain, though perhaps occult, morbific state of the atmosphere has hence taken place, under the influence of which, the predisposing, occasional, and exciting causes, universally admitted, are sufficient for its production. Such a condition of the atmosphere may not be so general as to pervade a whole country at once; it may arise, specifically, from the soil of certain tracts only; and it may possess the power of producing a similar condition in the air, with which it comes to be commixed. The progress of almost all epidemics has been more or less progressive and gradual, although the concurrent opinions of most medical men have been directly adverse to the idea of their being of an infectious nature.

They contend, that, if cholera had been infectious or contagious, it would be utterly impossible to account for its partial invasions, as evidenced in the many instances already cited; thus, two corps marching together and keeping up an unreserved intercourse, the disease shall prevail in one, and be unknown in the other; troops passing through countries suffering from it, entirely escape; or, they experience severe attacks, while the inhabitants of the countries through which they pass, are exempted; detachments of a regiment, arriving from a particular place, suffer severely, while the rest of the regiment, which has remained stationary, shall hardly furnish a single case, although the former may be living in the same barracks, and their sick in the same hospital. Above all, they contend that the evidence of the non infectious, or non contagious quality of cholera is clearly established, by the escape, in so many instances, of the attendants on the sick ; not only in the case of medical attendants, who may be admitted to be inured to the contact of sick, but of the attendants of every description, who have slept on the same beds with the patients, and sustained such an intimate intercourse with them in every way, as to render their general immunity from the disease altogether irreconcileable with the idea of infection or, contagion. They observe, that, if medical men have, in some, or even in many instances, suffered, and if the relations, and attendants, and whole families, have fallen victims to the disease, it is fairly attributable to the effects of their great fatigue, their anxiety, their mental depression, and their exposure in common to the occasional causes, such as bad food, privations of various kinds, indifferent shelter, and peculiar local circumstances.

The most striking instances of immunity from the disease, under the most intimate personal intercourse, will be found recorded in the original reports. In the hospital of the Royal regiment, only one individual, out of a hundred and one attendants, was attacked with the disease. In that of the 11th Native regiment, at Vizianagram, as recited by Mr. M'Andrew, page 33, not one was seized, although their numbers would seem to have been great. In the hospitals at Trichinopoly, no attendants were taken ill. Many Medical Officers appear to have slept in their hospitals without suffering any bad consequences. At St. Thomas's Mount, where a general receiving hospital for patients with cholera was established, and where the numerous attendants were people not at all accustomed to hospitals, not one of them was taken ill ; yet it was not uncommon to see them using the bed clothes of patients, who had just recovered, or died. The same observation applies to the numerous receiving hospitals established at Madras. Mr. Acting Surgeon Gibson, in reporting on a late attack, (April 1823,) experienced by the 69th regiment, at Wallajahbad, observes ; "I had ninety-two admissions, and increased the establishment of servants to double : I lived in the Hospital, amidst the sick day and night ; and yet, neither I myself, nor any of the servants got the disease ; but the Hospital Serjeant's wife, living in a retired room, not near any disease, had a severe attack. The disease came on suddenly with a hot land wind, and went off as suddenly when it ceased.* At my suggestion, that wing of the regiment, in which the disease prevailed the most, was encamped on a piece of high ground in the neighbourhood, and not a case came in from Camp, although every intercourse imaginable was kept up between it and the Barracks. No steps were taken to prevent contagion when this wing of the regiment returned to the same barracks, and yet no cholera has since been heard of."

It will not escape the observation of the reader, that many of the principal circumstances, which have been noticed in the history of cholera, are left wholly unexplained by either doctrine ; and, amid such a variety of conflicting opinions, and contradictory appearances, it seems fruitless, if not presumptuous, to offer any decided judgement. The question will doubtless receive its decision, when our knowledge of the laws of infection in general is more matured ; but its merits have at least been attempted to be fairly exposed, as their consideration may, in abler hands, perhaps throw some additional light on the subject.

Proximate Cause.

Mr. Orton, in his very valuable work on cholera, lays down these two propositions.

1st.—That the proximate cause of cholera consists in a diminution of the energy of the nervous system.

2d.—That the deprivation of nervous influence thus produced, extends to all the functions ; and immediately produces the phenomena of the disease.

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* The first case was admitted on the 9th April 1823, and the last on the 25th June—the severity of the disease was in April : 68 admissions and 16 deaths took place in that month : 20 admissions and 2 deaths in May ; 4 admissions, and no deaths in June.

The first proposition would seem to be pretty generally admitted as true, leaving the question of the origin of the assumed diminished nervous energy, open to discussion. The second proposition is more questionable. If Mr. Orton considered, that the " diminution of the energy of the nervous system," and " the deprivation of nervous influence," are synonimous terms, it is to be regretted, that the same expression was not used in both of his propositions. For it is probable, that many of his readers may understand, by nervous energy, that state, inherent in the nerves, by which they are capable of being duly affected by their natural stimulus : and, by deprivation of nervous influence, they may understand the subduction of the natural stimulus. At any rate, the nerves themselves, may either be primarily the seat of disease ; or, they may be in a healthy state, but deprived of their natural stimulus. Still, the system at large will thus suffer under diminished nervous power. The functions of the brain, and the functions of the nerves, would not seem capable of being resolved into a single and undivided function : nor is it proved, that the cause of these functions is one and the same. There appears, from the history of cholera, to be even very little connection between one part of the nervous system, (including the brain), and another. If there were but one general cause of the functions of the brain and nerves, then a subduction of that cause would lead to " a diminution of nervous energy," and it would " extend to all the functions," as assumed by Mr. Orton : but evidence is not wanting to shew, that the functions are very far from being generally affected in cholera : and it seems more reasonable to conclude, on an attentive consideration of the phenomena of the disease, that the symptoms are severally produced by one or other of these causes, a diminished energy, *primarily* arising in that part of the nervous system governing the respective *seats* of the symptoms ; a want of the natural stimulus ; or, a diminution of the nervous power, arising from a cause originating in these *seats*, and affecting the nerves *secondarily*. Mr. Orton, assuming the truth of the two propositions above stated, refers the diminution of nervous energy to a deficiency of electricity. It seems impossible to conceive, however, even admitting electricity to be the principle of life, that the effects of its mere deprivation should be manifested by cholera, and by cholera alone : but the fact of such deprivation, it has been already attempted to shew, is very far from being established.

The proximate cause, or what would be more correctly expressed by the term, the nature of cholera, we would imagine not to be essentially connected with the lesion of any organ ; but to be a morbid affection of the system or set of organs, by the powers of which the vital and natural functions of the body are conducted, and on which life depends. This morbid affection, however, we should conceive to be distinct from a mere negation of the powers, which naturally excite these organs. If it were a mere negation of influence, we might expect to see a simple cessation of their functions, but not the morbid phenomena usually displayed in cholera. We may, indeed, consider the affection of the sanguiferous system as an example of such simple cessation of function, and this being by far the most formidable symptom of cholera, it must be allowed to give weight to the opinion we are combating. It has been very generally concluded, though perhaps without sufficient reason, that the power producing cholera is of a sedative nature.

There is an analogy, or resemblance, between the symptoms of cholera, and those produced in the body by certain animal and vegetable poisons, and other noxious matters ; but, by no means so perfect, as to advance us, in any very material degree, in our knowledge of the nature of the disease. According to the experiments of Mr. Brodie, certain vegetable poisons act by destroying the energy of the brain. In these cases, the blood is found to be of a dark or black colour : but the heart is not immediately affected ; and it continues to circulate this black blood for some time after death. Others act at once on the heart ; and by a suspension of its action, destroy life. In these cases, the blood is of a florid or scarlet colour. In cholera, however, there seems to be an equal diminution of those powers, which produce the circulation of the blood, its florid colour, and the evolution of heat. The exhibition of the Upas Antiar, which, in its effects, approaches the most closely of all the poisons, to the nature of cholera, is yet found to be attended with a florid colour of the blood. The action of this poison is upon the heart. The larger arteries are found, on dissection, to be extremely distended with blood, and on their being punctured, it starts vehemently from the orifice. The effects of this poison are stated to be, debility, cold sweats, spasms, restlessness, vomiting, purging, and great congestion in the internal vessels. The Upas Tieutte, or tchettick, supposed to act on the brain, causes death very suddenly, and with fewer of the symptoms of cholera. Here, the action of the heart goes on for some time after apparent death. The blood is black; but there is no congestion.

It must be confessed, that, if we candidly examine our knowledge of many other diseases, we shall find, that we are nearly or altogether as ignorant of their proximate cause, or *essential nature*, as we are of that of cholera. The sum of our knowledge amounts, in fact, to little more than this, that we know certain diseases are peculiar to certain climates, that other diseases are common to all climates, and that the application of certain exciting causes will in one case be followed by a peculiar, or what is often called, an endemic disease, and in another by some ordinary disease. Cholera is evidently a disease, which is endemial to a hot climate; that is, under the influence of a hot climate, the human body is disposed to fall into the morbid action, which constitutes cholera. What that influence is, or how it should be liable to change, so that at one period the disease is hardly known and at another it spreads as an epidemic, we are entirely ignorant; as we are, in respect to the influence producing hepatitis, dysentery, fever, and many other diseases. This disease then, is natural to India; and its *late prevalence* is no more a proper subject of surprise or investigation, than its preceding *long absence*. From the circumstance of the skin and mucous membranes being so very generally affected, we may perhaps infer, that many of the exciting causes act directly on these surfaces; but we can no more explain how these at one time produce cholera and at another not, than we can, how, in the climate of India, the liver is more prone to run into inflammation and suppuration, than in a colder one. We can form no rational conjecture, how, or in what manner, the morbid state of the brain and nerves, which is supposed to constitute the proximate cause of cholera, can arise, without the intervention of an external exciting cause; though we are not warranted to conclude, that this is impossible.

Before dismissing this subject, it may be proper very briefly to notice some of the theories, which have been brought forward in explanation of the proximate cause of cholera. One of the earliest of these was, the absence of bile. It must now be sufficiently apparent, that there is no want of that fluid, although its flow into the intestine is pretty universally interrupted. In certain instances, however, bile has been present both in the stomach and intestines, without altering the fatal nature of the attack. As a prognostic, the return of the flow of bile is most favorable, not from the presence of that secretion being in itself subversive of the morbid state, but as indicative of the restoration of one of the natural functions. Cholera has been supposed by one practitioner to be caused by an over secretion of the gastric juice: and the appearance of the discharges has by many been likened to that fluid. There is indeed hardly any other argument, in support of the idea, than this resemblance, which, however, is by no means uniform. The theory seems sufficiently disproved by the frequent occurrence of cases, in which no discharge from the stomach or bowels takes place; the author imputing the train of morbid symptoms to the "gushes" of that fluid, which would at least imply such quantities, as we could hardly suppose to be retained. Some have supposed a spasm of the extreme vessels; others, a spasm of the arteries, to be the proximate cause of cholera. There is certainly no evidence in support of the former doctrine; on the contrary, every appearance leads to the conviction, that there is a great relaxation of the extreme vessels; and the cases, in which arteriotomy has been performed, would rather lead to the conclusion, that the arteries had lost their contractile power. The blackness of the blood in cholera, has been viewed by many practitioners as at least very intimately connected with the most formidable of its symptoms, if not to be their proximate cause. Experiments however have proved, that the circulating power of the sanguiferous system will go on without interruption, although the blood be black ; it is also found to be black in some other diseases ; and, in Cholera, it seems proved, that the blood occasionally retained its florid colour after the disease had been established for some time. The function of the lungs, in reddening the blood, is sometimes preserved, as shown by experiments, while the evolution of heat ceases. This state might be referred to the action of a poison on the brain . but, the history of cholera shews, that heat is evolved at a time, when the circulation was almost subdued, and when the reddening of the blood did not appear to be effected. Precise thermometrical observations are, however, wanted to determine the positive degree of heat. The more natural conclusion appears to be, that the function of the lungs partakes only of that disorder, which affects the other functions, and is not itself primarily affected. Some practitioners have considered the stomach, others the intestines, to be the original seat of cholera. As far as respects the question of these organs being the medium, through which the immediate exciting cause frequently acts, and involves the vital functions, the opinion cannot either be controverted, or proved : but we are not warranted by any analogy to refer the train of fatal symptoms of cholera, to any disorganised, or spastic state of those organs which has yet been brought to light. If the opinion be well founded, the effect must be produced, we would imagine, by the action of something deleterious on the nerves of these organs ; or, by a diseased state of the nerves themselves. Cholera has been defined to be, " a peculiar, violent, spasmodic, contraction of the capillary vessels of almost the whole body ; but particularly the skin, and its continuation, the lining of the alimentary canal." No reasoning whatever in explanation of this theory has been offered.

Prognosis.

In our prognosis we are guided principally by the type or form, which cholera has assumed ; and by the period which may have elapsed from the commencement of the attack. If the case should present, *apparently*, violent symptoms, such as great irritation of the stomach and intestines, much pain in these parts, and severe spasms of the muscles ; if there be a natural, or perhaps an increased strength of pulse, a tolerably natural temperature of skin ; and if only a short time have elapsed from the invasion of the disease ; the prognosis will be favorable : these cases are generally found to be much under the influence of curative means. It has not been ascertained how long the system is capable of supporting, unaided, the symptoms noticed above ; but it is the concurrent opinion of all practitioners, that the loss of two or three hours, in any case, always greatly enhances the danger.

If, on the contrary, the case should present but few symptoms of excited, or increased actions ; if there be little or no pain ; if vomiting or purging should either not have appeared, or , having appeared should have soon ceased, without any improvement in the condition of the patient ; if there be little or no spasm ; but, along with these negative appearances, if there should be collapse, coldness of the surface, deafness, and great depression of the circulation, the danger is imminent indeed. This awful state of things occurs, in many instances, from the first few minutes after the invasion of the disease : in the majority, however, it takes place only after a more considerable lapse of time. In all cases, where symptoms of that description are once present, the formidable nature of the attack is established. The danger of delay, therefore, lies mainly in the chance of this state of collapse being formed, before the practitioner sees his patient ; but, even under these untoward circumstances, there are proportionate degrees of danger ; the prospect of recovery becoming more and more remote, according to the period of their previous duration. The danger of cholera may thus be said to be manifested, not by the violence of morbid actions, but by the diminution or cessation of natural actions. The cessation of the former, likewise, cannot be held to be favorable, unless accompanied by an improvement in the latter. The most favorable of all symptoms is the restoration of the pulse, and without that, no reliance can be placed on any other sign. If, along with the restoration of the pulse, the heat of the surface gradually returns, the uneasiness and anxiety lessens, and the natural secretions begin to appear, the safety of the patient is pretty well assured; though he may be still liable to suffer from morbid associations, as well as from relapse.

It must be acknowledged, that cholera is a disease so fraught with danger, that, in our prognosis, we are often miserably disappointed. We are never sure, that on some sudden, and often hidden movement in the system, or some slight imprudence of the patient, the pulse may not at once sink, and death ensue. There can be no cases more embarrassing than those, in which there shall exist some unequivocal mark of the disease, and yet the system in general remains so little disturbed for a time, that not only the unfortunate patient is deceived in respect to the disease under which he labours, but even his medical attendant admits the conviction with reluctance: while, from the evidence of his experience, he is too fully sensible, that these slow, insidious, and seemingly mild attacks, are, of all, the most unmanageable.

Method of cure.

In no disease has the sovereign efficacy of numberless specifics been more vaunted, and in none have the utmost efforts of the medical art been more frequently insufficient, than in cholera: for, while the tendency of the disease is, in almost every case, towards a fatal termination, there is yet a certain stage, at which its progress may, in very many instances, be arrested by the most opposite, often, apparently, by trifling remedies; and after which, all our means are too often unavailing. The circumstances which relate to the cure are modified and influenced by time, by the prevailing form of the disease, and by the constitutional idiosyncracy of the patient. It will be admitted, that, when we can detect a morbid action of any particular organ, before any lesion of its structure shall have taken place, the cure is comparatively more practicable. The earliest movements in cholera, especially as it first manifested itself in these parts, were generally confined to irritation of the stomach and bowels: and in this stage it is unquestionable, that the mere exhibition of an anodyne, a cordial, or an antispasmodic medicine was sufficient, in numberless instances, to stop the progress of the disorder, and to effect a cure. At this period, indeed, it seems probable, that, while the epidemic influence was at the acme of its strength; persons, with little predisposition, were subjected in some degree to its influence, as we know to be the case with medical attendants, who, though proof against an attack of a prevailing disease in its regular form, may still suffer considerable constitutional derangement from inhaling the noxious air of the chambers of the sick. After the first epidemic sweep of cholera over these territories, it was universally acknowledged by practitioners, that the remedies they found so successful in their former practice, were almost totally unavailing in the subsequent visitations. This, it is presumed, may, in some degree, be accounted for by the preceding observation; as well, as by the supposition, that on the first alarm of cholera instances of ordinary vomiting or diarrhæa, being considered, even by medical practitioners, as cases of that disease, were treated accordingly, and enumerated as cures.

The general symptoms of cholera being so strongly marked, the indications of cure on its first appearance, were, by almost universal consent, no less distinctly laid down: namely, to moderate and subdue inordinate actions; and to support or restore depressed actions. As all these actions bore reference, apparently, to functional, rather than to structural derangement, the same means naturally suggested themselves to the great body of practitioners; but, it was soon found, that the indications of cure could not be accomplished by the remedies prescribed. From this period, a great diversity of opinion and practice arose; many empirical remedies were brought forward to notice; while, the essential differences in the prevailing types of the disease at different times, and at different stations, contributed, not a little, to distract the minds of medical men; and it has been only in later times, that the necessity of treating the disease on general principles has come to be felt and acknowledged.

In prosecuting the remarks on the method of cure, it would have been most convenient to follow, generally, the order of the indications already noticed; offering such particular observations as may occur, on some of the most important of the remedies proposed : but the nature of many of them is such, that they are necessarily resorted to in our endeavours to fulfil the indications both of moderating the inordinate actions, and of restoring the suppressed actions. We cannot, therefore, strictly follow that order in treating the subject of cure.

Opium.

The first remedy, that was indicated, in the view of calming gastric irritability, and of subduing spasm, was opium, either in a solid, or liquid form : and no other medicine has been so universally employed, or has so fully upheld its reputation in the treatment of cholera. In the greater proportion of the cases of natives, when given at an early stage, that is, before collapse has come on ; and probably also, though less certainly, in a considerable proportion of european cases under similar circumstances, full doses of opium have unquestionably been attended with the most decided success. The native constitution, from the general simplicity of the mode of living, seems more susceptible of the appropriate effects of remedies, and less prone to run into complicated morbid actions, than the european ; for when the opiate proved curative, as it did in almost all simple cases, the cure was at once complete, and the patient in a short time returned to his ordinary labours. This was very seldom observed to be the case with europeans, whose different mode of life render their constitutions less susceptive of the full impression of the opiate, and more prone to run into other states of disease.

Considerable diversity of opinion prevails in respect to the doses of this medicine, and it does not appear that the subject has been considered with very strict attention to any physiological doctrines. From 80 to 100 drops of the tincture, and two to four grains of solid opium, would seem to have been the quantity most commonly exhibited, as the first dose ; but it has been frequently given to the extent of two and three drachms of the tincture. Some practitioners went on increasing the doses, if their patient did not experience relief; others also persevered, but with diminished quantities ; and others repeated the doses they commenced with. The medicine was generally exhibited without attending much to the aggregate quantity taken ; the practitioner being guided only by the effects. It has been usual to prescribe the first doses of opium in the form of tincture, and afterwards in a solid form, either that of pills, or of a soft paste : these by their more easy retention in the stomach and gradual solution, certainly promise important advantages. Opium has been so largely and indiscriminately used, that we are not enabled to determine its real effects in all the stages of cholera, in comparison with any considerable number of cases treated without that medicine. A few, but very few practitioners have, indeed, abstained altogether from its use ; and others have used it in sparing quantities, especially as to the repetition of doses : but the practice has not been distinguished by any particular success. This much must, however, be admitted, that the recoveries, which have taken place *without* the use of opium, afford proof, that it is not so absolutely indispensible as some have alleged.

While, as an anodyne and antispasmodic, the efficacy of opium in the cure of cholera has been proved by experience to be great, it is painful to be obliged to acknowledge, that in many apparently promising cases, where, even, its narcotic effect was evident, it had no ultimate effect in warding off a fatal termination : and in the advanced stages of the disease, whether it was first exhibited at that period, or whether its use may have been begun earlier, and then continued, its efficacy in restoring the depressed or suspended functions, like that of all our other remedies, is extremely uncertain. Those cases may, with most confidence, be chiefly trusted to the effect of opium, in which the primary symptoms are seated, apparently, in the stomach, as indicated by vomiting, and spasmodic pain in that region ; and in the intestines, as indicated by violent purging, and painful contractions of the abdomen. Its effects are more uncertain, where the affection of the stomach is obscure ; where there is a moderate, but insidious purging ; where there is great sense of heat in the epigastrium, and in every case where collapse has come on. The practice of persevering, to the last, in the use of large doses of opium, under all the variety of symptoms which cholera presents, has been, in the main, unsuccessful; while, even the recoveries, which, have taken place under such circumstances, do not appear distinctly referrible to the action of that medicine. Opium, therefore, is by no means a specific in the cure of cholera, but it is an auxiliary of the first importance. It should never be omitted in the earlier stages, and should be made to precede the use of any other remedy that is not given in conjunction with it. When exhibited as an anodyne, or antispasmodic, it should be in the form of tincture, and to the extent of 60 to 100 drops, repeated according to circumstances: when given as a cordial and stimulant, which will generally be the indication, after the inordinate actions are allayed, the form of a soft pill or paste is preferable. The solution being gradual in the stomach, the quantity given at once may be three to five grains. If the tincture be given with these views, the doses should be small, and repeated at short intervals.

Æther, Ammonia, &c.

To answer intentions similar to those which lead to the use of opium, æther, ammonia, camphor, castor, musk; the essential oils of peppermint, clove, and cinnamon; various tinctures, all combining aromatic, and highly stimulant ingredients; bitter tinctures, the drogue amere, &c. have been very generally employed. Moderate and well timed doses of any of these medicines, singly, or in conjunction with opium and calomel, have unquestionably been found eminently useful: but, like opium, the period, during which their employment can be depended upon, as holding out a tolerable chance of success, is extremely short, and may be considered to be chiefly comprised in that, which precedes organic lesion of the first principal passages, or their functional atony. A perusal of the reports will shew to what extent the use of these remedies has been carried, and the indifferent success attending the practice in its extreme limits. It has been very distinctly remarked by many practitioners, that the use of these remedies was often extremely ungenial to the feelings of the patient, especially those who suffered much from thirst, from burning heat and fixed pain in the region of the stomach; and to have been productive of aggravated distress. After a certain interval it was obvious, that the stomach was no longer sensible to their action.

Spirits, and wine.

Ardent spirits and wines have been exhibited by almost every practitioner; and indeed, it is impossible to look upon a patient ill with this disease, without feeling at once a disposition to employ them, even largely. It soon becomes manifest, however, that the excitement of stimuli is insufficient, by itself, for the cure of cholera: the fatal symptoms too often come on under the most careful and assiduous use of this description of remedy: and after the stage of collapse is formed, their exhibition is but too frequently altogether unavailing in rousing the energies of the system. Nearly the same remarks apply to the use of wines and spirits, as to the use of opium, and the other medicines mentioned above. In the early stages, they are of acknowledged utility: in the advanced stages, they, like other remedies, too often fail. The extent, to which they should be given, has not been sufficiently considered, with a reference to the actual state of the patients, and to the laws of excitement, as far as they are generally understood and admitted. If the collapse in cholera be the effect of a direct diminution of the capability of an organ to be affected by stimuli, we should commence by doses large in proportion to the supposed degree of this diminution: and we should decrease them, according to the progress made in restoring excitability. But, if the collapse be merely owing to a want of natural stimulus, the doses should be small in the commencement, and increased gradually. Most practitioners appear to have decreased the quantities of spitits, after the first doses, from which we may infer, that they considered the state of collapse as the result of a *diminution* of excitability. It is difficult to decide upon the comparative merits of the question, or the respective benefits of either mode of practice. Some few practitioners have abstained altogether from spirits or wine, looking upon the disease as fundamentally inflammatory. The success of this practice has not been such, as to give it any claim to preference over a moderate use of those remedies.

Calomel.

Calomel has been used almost as indiscriminately as laudanum, for the cure of cholera, Different indications, however, has been followed by medical practitioners, in the adoption of this medicine. Some exhibited it to quiet the irritability of the stomach : others to emulge the biliary vessels : some regarded it as a powerful mean of restoring the lost balance of the circulation, and of subduing inflammation ; a still greater proportion have not explained their views at all. With respect to the supposed quality of quieting the irritability of the stomach, there seems abundant proof, that in cholera, at least, calomel does not possess it : but, on the contrary, it was, when judiciously observed, very often found to have quite an opposite tendency. It is now pretty generally admitted indeed, that mere irritability of the stomach is not, in itself, a symptom of dangerous import : and, that if the medicines given to check it, have no other concomitant effect the result is by no means advantageous to the patient. The effect which calomel, in large doses, is generally said to have in allaying the irritation attendant on certain inflamed states of mucous membranes has probably led to its employment as a sedative in the irritations accompanying cholera. It is perhaps also fair to infer, that being a medicine of acknowledged great powers, its use, once admitted, was, in numberless instances, resorted to, merely as a matter of practice, which it might be questionable to omit. This inference is strengthened when we consider the mode in which calomel was, at first, almost universally administered in cholera : from 15 to 20, generally 20 grains, of the dry calomel being placed upon the tongue, it was " washed down by 100 drops of T. Opii !" Surely this form of exhibition could hardly have occurred to the profession in general, as being suitable in a disease like cholera. We would rather apprehend that the remedy, and the way of giving it, were taken up without due consideration. If it be urged, that the object was the speedy diffusion of the calomel over the surface of the stomach, the same end might have been attained by suspending it in some mucilaginous fluid.

The quantities of calomel, administered in this and other modes have been great. The stomach having often lost its power of rejection, this substance has been found coating its internal surface ; and, when given in boluses, lying imbedded in greenish mucus, marks of inflammation being visible on the spot. The success of those practitioners, who did not use calomel in the primary treatment of cholera has been fully as great as that of those, who did : while the arguments, distinctly brought forward by various Medical Officers against its *early exhibition*, appear decisive against the observations which have been offered in support of the practice. Calomel has unquestionably a powerful effect in exciting the biliary system, and in this view, its exhibition is highly necessary : but the suppression of the excretion of bile being only a link in the common chain of symptoms, and its partial, or occasional removal, or even its total absence, having been proved to be of little consequence in the general course of the disease, to attempt to excite it by particular means may be considered as premature and injudicious. Whenever a favorable change takes place, indicated by the renewal of the *ordinary* functions, then the exhibition of the appropriate stimulus seems to be clearly indicated, and not till then. We do not, of course, here mean to include the *vital functions*, whose condition, must form the primary and main object of our practice. Calomel is not a remedy, that can lie altogether passively in the stomach, while that organ retains its vitality : if it does no good, it will do harm. Cholera has been frequently said to bear much resemblance to congestive typhus. It is probably from this analogy, that calomel has been exhibited in cholera as a restorer of the balance of circulation : or, those, who embrace the doctrine that the disease is of an inflammatory nature may expect the same benefit from its use, which is derived from it in an over excitement of the circulation. Even allowing however, that venous congestion, as in typhus, or excited arterial action, as in hepatitis or enteritis, are equally under the curative influence of calomel, is it fair to conclude that the affection of the circulation in cholera is essentially allied to either of these states ? It would seem not : the affection of the circulation in cholera, more probably has its origin in some sudden functional impression, of a nature on which calomel, to say the least, can hardly be supposed to possess that rapid and direct influence, which is requisite in the cure of the disease.

Bloodletting.

The abstraction of blood, unless as an anti-spasmodic, is a remedy so little indicated by the usual symptoms of cholera, that its employment in the cure of this fatal disease has afforded a signal triumph to the medical art. It requires no common effort of reasoning or reflection to arrive at the conclusion, that, when the powers of life appear depressed to the lowest degree, the pulsation of the heart all but extinct, the natural heat of the body gone, and the functions of the system suspended and incapable of being revived by the strongest stimulants, the abstraction of blood might yet prove a remedy against a train of symptoms so desperate. Bleeding was, no doubt, first employed in cases where there was much spasm, and where the powers of the system had not much declined: the relief was generally obvious and immediate, and the practice in such instances was thus established. Dissections having frequently shewn a loaded state of the vessels of the viscera, and apparent inflammation of their mucous membranes, venesection was also adopted to obviate these conditions, and naturally enough: but the employment of bloodletting, without reference to either of these states, and as a remedy for collapse in cholera, must have been the result of reasoning and reflection, founded on the general principles of the science; a result highly honorable to the profession; and, as we shall endeavour to shew, of the utmost practical importance in the cure of the disease.

We have no precise information regarding the manner, in which venesection was performed in general; although, in such a disease, this seems a matter of very considerable consequence. It is remarkable, that in a disease like cholera, syncope should be so rare a symptom. When it is brought on by venesection; it is generally favorable, which may most probably be imputed to its being employed during violent spasm, and before any sinking has taken place. We can then readily understand, that the free evacuation of blood, which may be supposed to precede the syncope, as well as that state of relaxation itself, will be followed by amendment: but there is no information, which can lead us to believe, that syncope has often followed the abstraction of *small* quantities of blood, or that success had followed small bleedings. The usual expression is, that after a scanty discharge of blood, it ceased to flow, and that depression of pulse, with *faintness*, not *syncope*, came on, or was increased. We are not informed, whether bleeding has been generally performed in the recumbent, or half erect posture. It is evident from the reports, that the mere act of elevating the body has been followed by faintness and even death; and if venesection has been often attempted in the half erect posture, we may thence account, in some measure, for the frequent want of success in obtaining blood.

Few remedies, on a fair trial, have been more generally and unequivocally advocated than free bloodletting: and the most that has been urged against it is, that it is not always successful. The advocates for bleeding proceed, however, on the principle, that a certain quantity of blood is to be obtained, in order to ensure success, which few of them estimate at less than about 30 ounces. Those, who are disposed, either less favorably towards bleeding, or to condemn it altogether, object, that if the circulation is in a condition to admit of free bleeding, the case is a mild or favorable one, and would probably yield to other remedies. There is no doubt, that fatal collapse has sometimes suddenly followed, even *large* bleedings, which has staggered the faith of many practitioners in the general safety of the remedy; but, in the great majority of cases, it is after *small* bleedings that this has happened. There is the most ample evidence also, that cases, especially in Europeans, even under the most favorable appearances, will often, in spite of all internal and external remedies, go on to a fatal issue, when bleeding is not practiced.

The cause of collapse coming on after, or during bleeding, in cases of cholera, may perhaps be explained, so as to obviate the objections thence arising against it as a remedy in that disease. It seems unquestionable, that the evacuation of a small portion of blood, such for instance, as we might suppose to be yielded by the remoter branches of vessels, is followed by increased debility: but if we succeed in carrying on the evacuation, till its effects reach the internal vessels and the heart itself, *then* the circulating system seems to be freed from an oppression which impeded its functions, and it becomes equal to the task of propelling the mass of blood. This is a species of indirect excitement. The powers are not raised, but the resistance, or weight is lessened. Such is the theory, which has been adduced in support of bloodletting in cholera. The reader will be aware, that it is not new; its application to the particular disease, of which we are now treating, being the only novelty. *If the theory be true, the presence, or the supervention of collapse, so far from deterring us from going on, should only be regarded as additional reasons for renewing our efforts to get blood.* In proof of this, the following remarks, drawn from the journals of Medical Officers, whose testimony must be allowed to have the greatest weight, are adduced.

Mr. John Wilson, (page 260), in the case of Mootien, where the pulse had long ceased to be distinguishable at the wrist, abstracted twenty ounces of blood, on the supervention of oppressed respiration. The blood was of the darkest colour, very thick, and was obtained with the greatest difficulty. The patient had been ill about 20 hours, for at least 12 of these he had remained without pulse at the wrist, that is, from the time he entered the hospital. Yet within ten minutes after the bleeding, the pulse was distinguishable; it soon began to rise, and the patient recovered. In the case of Vencanah, (page 261) the pulse had likewise disappeared: there was deafness, laborious respiration, and every bad symptom: he was bled to 20 ounces, with great difficulty; the blood was of the darkest colour and extremely thick. "Immediately after the bleeding, he breathed much easier, and his pulse at the wrist could be faintly felt." The patient recovered. In the case of Captain D., which follows that of Vencanah, bleeding was practiced at a very late period, when, from the congested state of the lungs, by which, it would appear, their structure was disorganised, no plan of treatment would probably have succeeded.

Mr. M'Leane, 84th Regiment, in the case of Broomhead, (page 263), "¼ to 8 A. M. P. now 120, very weak;" bled to lb 1. "9 A. M. P. continued low after the bleeding." "10¼ P. not perceptible at the wrist, is covered over with cold clammy perspiration:" bled to 8 ounces. "¼ to 11, P. felt in a very slight degree at the wrist." This case terminated fatally at 5 o'clock, but the pulse at 2 p. m. though still very feeble, had fallen to 80. Even in this case, where the first bleeding was only to a pound, and the second to half that quantity, the system appears to have made considerable effort towards restoration of the circulation.

Mr. M'Cabe, Poonamallee, in the case of Greenfield, (page 265). This case appeared to be going on well, for about 12 hours, when a violent return of the symptoms led to the abstraction of 20 oz. of blood, with immediate relief, and the skin became warm, and the pulse stronger. In the case of Howard, (page 266), while the pulse was "extremely feeble," he was bled to 30 oz. on the occurrence of urgent symptoms, and with immediate relief: 3 hours after, the "pulse was full, and heat of skin nearly natural." In the case of Fife, when the pulse was "quick and rather tense," 55 oz. of blood were drawn, with entire relief. Some hours afterwards, he had a recurrence of symptoms, "pulse small and quick, surface warm," 30 oz. were again abstracted, with the same advantage. P. for nearly four hours from this time, was not perceptible, and his feet and legs became cold." The P. however returned, and he did well.

Mr. Maclean, 53d Regiment, in his remarks, on three cases where the abstraction of blood was decidedly successful, observes (page 269, 270.) "I have no hesitation in saying, that even in the very last stage of the disease, in the robust European, and also the enfeebled native, bleeding should form a principle in our ratio of treatment: no sinking of the pulse, or general appearance of debility, should deter us. They are the consequences of overaction from the consequences of an undue quantity of blood being thrown on the abdominal and thoracic viscera, which are relieved by removing the cause. I am of opinion with Dr. Jackson, in saying, that by diminishing the quantity of blood, you increase the power of the circulating system.

Dr. Daun, 89th Regiment, in the case of Murdock, page 271, the pulse being "weak and irregularly intermitting," bled to 32 oz.; "he appeared to revive in proportion as the blood flowed, while his pulse at the same time rose in strength and size." Some time afterwards, his symptoms recurred:-pulse intermitting and has become again weak—skin moist and cool—the venesection in consequence has been repeated, and 36 oz. more blood have been abstracted, the pulse continuing to rise all the time, and the patient expressing himself to be relieved, in even a still greater degree than he had been by the first bleeding" Dr. Daun farther observes: "So far as my experience enables me to form an opinion, bleeding, *early and copious* bleeding is the only means of cure, yet discovered, on which any reliance should be placed." "In two cases, the pulse, about 20 or 30 minutes after the first bleeding, which was to the extent of 32 ounces, began to sink again, and to intermit, and the cold perspiration, and indescriblabe anxiety peculiar to the disease to return. The vein was in both cases again opened, and greater relief was discovered from the second abstraction of blood than from the first; an equal or even a larger quantity of blood being lost by the second than by the first bleeding."

Mr. Annesley, Garrison Surgeon of Fort St. George, in the case of Sparling, (page 277), while the pulse was small, frequent, and very weak, bled the patient, though with difficulty. "When 16 oz. were drawn, she had a return of the spasms, and the blood ceased during the continuance of them." After the spasm had subsided, the "pulse very weak and small" 16 ounces more of blood were drawn and with great relief. Though covered with a cold dew, she feels no sensation of faintness, and the blood having now changed to a more natural state, 6 oz. more were allowed to flow." Her pulse at ½ past 10, was "softer and fuller and 96 in a minute." Mr. Annesley also observes, "I have succeeded in almost every instance of bleeding, when it could be practiced," alluding to the difficulty of drawing blood: and again, "in place of syncope being produced by bleeding in the cases which I have treated, the Pulse has invariably improved, and the feelings of faintness and debility disappeared."

Mr. Wyse, Garrison Surgeon of Trichinopoly, page 232 and 233, observes, "nine or ten patients, (Natives) had died very suddenly, who were treated with large doses of laudanum and calomel, stimulants, frictions, and blisters. In my last visit, two patients were ill; one had just been seized, the other had been sick for ten or eleven hours. The pulse was very obscure in both, but scarcely perceptible in the latter. The blood flowed freely, and of natural quality from the former, who, after the operation wished to join his comrades at work: from the other, 6 or 7 oz. of thick tar like blood were drawn with difficulty, but with much relief to the præcordial oppression and he returned to work in two or three days." Again, at page 229 in the case of M'Namara, he observes: "He fell into syncope while I applied the bandage for venesection—but I was not deterred, trusting to my former experience, that if blood could be drawn, he had a chance and the only chance I may say, of resuscitation."

Dr. Irving, Golundauze Battalion of Artillery, page 280 and 281, in the cases of four Natives, bled when the pulse was, in the first, "very quick, small, and tremulous:" in the second, "pulse not perceptible at the wrist:" in the third, "pulse 118, small and rather weak:" "pulse falling off:", and at last, "pulse hardly to be felt:" and in the fourth, "pulse at times not to be felt:" along with all the usual signs of collapse; yet in each of these cases, blood being obtained, though with great difficulty, the circulation was set free, and the patients recovered.

Besides the very ample evidence, which will be found in the printed reports, in favour of bloodletting as a remedy in cholera, the opinions of the majority of Medical Officers whose observations are not inserted, are also decidedly in its favour. The objection chiefly urged, is not against the practice, but rests on the too frequent impracticability of procuring a sufficient quantity of blood. It is acknowledged, even by the most zealous of its advocates, that this difficulty has often occurred, and proved insuperable. When, however, the operation is performed with the moral conviction, that, if successful in obtaining blood, the life of the patient will most probably be saved, the operator will persevere, undiscouraged, in his efforts: he will call in every suitable aid, such as frictions, bathing the arm in hot water, re-opening the orifices of the vessels, administering stimulants, and external warmth. He is not deterred and induced to desist by any intermediate accession of debility, or collapse; nor, is he tempted to rest satisfied with any temporary melioration of pulse; his object goes beyond the present moment, and he feels satisfied, that if he can fully unload the internal vessels, he will save his patient, and if he fails, that he will most probably lose him. It is not considered to be of much importance whether the patient may have been bled before or not, if his present symptoms indicate a repetition of the operation. The principle is, that collapse, in cholera, is not the consequence of the loss of blood, but is a condition which nothing but its abstraction can be trusted to for relieving. In the second case, however, when the medical man is not decided in his own mind, obstacles will be allowed to subdue his fortitude, and arguments will be thence deduced to dissuade him from perseverance. A sudden aggravation of the symptoms of collapse will be regarded as an effect of a remedy, at least doubtful; or, a transient return of vascular action will be held, either as a sufficient advantage gained, or as an indication that bleeding is no longer required. It is thus we may account for a vast number of ineffectual, because undecided attempts at bloodletting; and for a vast number of unsuccessful results, when the quantity abstracted falls short of that, which is required: for the volume of the blood must be reduced in a given proportion, in order to secure the effects expected from it. Any thing short of this will only take away from the patients strength, and not augment the motive powers of the circulating system; or what is the same thing, will not diminish the resistance to the motive powers.

Cholera is unquestionably a very dangerous disease, and so many circumstances concur in aggravation of its natural fatality, that we can scarcely hope that any mode of treatment will ever be devised which shall strip it of its formidable character. Much injury has arisen, however, from remedies being brought forward, and tried, as if they were absolutely specific and infallible. And amongst others, bloodletting has been put to this most unjust, and unphilosophical test. If strictly considered, it would, perhaps, be the least of all entitled to the appellation of a specific remedy; for in truth, there is great reason to doubt, whether it be directly curative of the essential symptoms of cholera. Its warmest advocates only consider it as an auxiliary, and never trust to it, but in combination with other, and which indeed appear to be, the strictly appropriate remedies. Congestion, for which alone it is indicated, appears merely to be a symptom or consequence of that morbid state, which forms the first and highest link in the train of choleric actions. The removal of congestion, which is mechanical, allows the heart to respond to the action of the other remedies. Should it be objected, from a consideration of some dissections, that no particular congestion had taken place, the blood appearing to be equally diffused over the vascular system; and that in some instances, the circulation, though ultimately affected, seems to retain its powers for a time, without material depression, yet, even in such cases, venesection, by lessening the volume of the blood, may still have beneficial effects. We should certainly apprehend no danger from it in cases of this description, used, *as it ought invariably to be, in conjunction with the other remedies.*

The Medical Board, in their circular letters, have advised the exhibition of antispasmodics and stimulants *prior* to the use of the lancet. By this means time is saved, and, what is perhaps even of still greater importance, the effect of the bleeding, and the action of the internal remedies are made to cooperate.

The abstraction of blood by leeches, or cupping appears, from the testimony of most medical men, to be nearly as uncertain as that by the lancet, and obviously, from precisely similar causes. The attempt at topical bloodletting may always, however, be resorted to, as affording some chance of success, when venesection fails. The chest or belly will readily be admitted to be preferable to the extremities, for the application of leeches or cupping; and we may be farther guided by the seat of any particular pain. Perhaps the neighbournood of the spinal marrow might be preferred.

With regard to the particular vessels which should be opened, as well as to the propriety of drawing off the blood quickly, or slowly, when we have the option, the question appears unimportant in any pathological view. The chief point is to get the requisite quantity of blood, and it will readily occur to the practitioner, that whatever vessel he may open, the flow of blood will be most certainly facilitated by studying the circumstances of the patient. He should be laid in a recumbent, and easy posture; be well supported by cordials; and if inclined to vomit or purge, contrivances should be adopted to permit these evacuations to be effected without altering his position.

External applications.

Warm bath.

Vapour bath.

The next remedies we shall notice are those, which are applied to the surface of the body. The extreme coldness of the skin, and the frequency of spasms in the muscles, which distinguished cholera, especially on its first invasion, immediately suggested the idea of the warm bath. Such additions as might be supposed to add to the efficacy of the common water baths, namely spirits, aromatic herbs, and common salt, were likewise recommended. The efficacy of these baths was not immediately questioned, but their preparation was necessarily at all times tedious. It was attended with difficulties in every situation; and in many it was altogether impracticable. Bathing moreover could never be employed without much fatigue to the patient. A succedaneum was then proposed, since well known by the name of Mr. Dalton's spirituous vapor bath, which, at first sight, seemed to promise the most important advantages, from the facility and expedition with which it was prepared; the powerful warmth produced; and the ease and comfort to the patient, in the mode of its application. It was soon found, however, that both the aqueous and vapour baths disappointed the expectations, which had been formed of them. When there was much spasm, with tolerable vascular action, the warmth and moisture gave relief; but, in the formidable cases, attended with a cold, wet skin, and a depressed circulation, it became quite manifest, that little or no advantage ensued in general from their use, nor was the temperature of the skin in any considerable degree restored by them. In these terrible cases, a very curious symptom was almost constantly developed; that of the patient feeling even a moderate degree of heat to be scalding and intolerable, while his skin was deadly cold.

Heated sand &c.

It was now considered, that the application of moisture to the skin, in that condition, and the exposing of the patient to the inhalation of air loaded with vapour, while his lungs were evidently in a condition little capable of performing their functions even in the purest atmosphere, was at best very questionable. The application of external heat, allowed to be indispensible, ought rather to have been conjoined with such measures as might tend to repress the profuse cuticular discharge, than to promote it. Accordingly dry heat, technically so expressed, had been pretty generally substituted for the aqueous and vapour baths, even before the Medical Board had ventured an opinion against their utility in cholera. The customs in this country afford great facilities in the application of heat; every european, and almost every native house affords a small couch with rattan, or corded bottoms; one or more chatties, or earthen vessels, which are always at hand, being filled with burning charcoal, also readily procurable, and placed underneath the couches, is found to afford any desireable degree of heat. The use of long bags made of flannel, or of cumbly or indian blanket, and loosely filled with heated sand, or heated salt, has likewise been much, and deservedly extolled: part of the good effects of these heated bags may be imputed to their absorbing the moisture as it arises on the skin. Strong frictions with the flesh brush, or warm dry flannels, has been found a very important addition to our means of cure.

Frictions, rubifacients, &c.

The use of friction with stimulating tinctures, and of acrid embrocations composed of garlic, capsicum, &c. has been occasionally resorted to, but their stimulating effects would appear to be counterbalanced by those of their evaporation. As a means of general excitement, sinapisms have been used; but not perhaps so frequently or extensively as their usefulness in some instances would warrant. In particular, sinapisms do not appear to have been resorted to as one of the *early means* of cure; so that when they have taken effect on the skin, their action on the system has been too often obstructed by the progress made by the disease; or, the skin itself has become insensible to their operation. Sinapisms, largely applied to the surface, and in proper time, hold out the prospect of a considerable and permanent excitement, and their early application is recommended to the serious notice of Medical practitioners. With similar views, and as topical counter-irritants, vesicatories, composed of cantharides plaster, or that plaster with the addition of the oil of turpentine; mineral acids; and boiling water have been pretty extensively employed.

The state of the skin, however, especially when the disease is advanced, is very frequently such as to render the action of vesicatories extremely uncertain. Even the strong mineral acids frequently fail in producing any lively impression: in these desperate states, boiling water has been had recourse to, and with effect; there is no readier, or more powerful vesicatory. The application of the various remedies of that nature to the skin, especially over the regions of the heart, the stomach, or the intestines, has been found to be of manifest utility, if employed while the skin is susceptible of their action. There appears sufficient evidence in many cases of their immediately rousing the sinking powers of life when every other remedy had failed.

Emetics.

Emetic substances, especially the tartrite of antimony, have been used in cholera, and not without success. The indications, which guided practitioners in the exhibition of emetics have been either to empty the stomach, or to determine to the surface. It appears certain, that the stomach very frequently does not possess the power of evacuating its contents in cholera: the vomiting, or efforts to vomit, in such cases, is described as a sort of convulsive gulping, in which the lower part of the æsophagus seems chiefly engaged. The contents of the stomach can neither be ejected, nor can articles swallowed enter the cavity of the stomach; they are apparently spouted up before they reach that organ. This condition is probably the precursor of that of complete atony. Now, although we cannot well conceive that the mere evacuation of the contents of the stomach can be of any importance in this disease, yet it will readily be admitted, that the excitement, of what may be termed the natural and healthy action of vomiting, may prove favorable; at least, that it is a condition preferable to the semi-atonic state just described.

Even when the atonic state of the stomach appears to be established, and the various stimulating, cordial, and antispasmodic remedies have no effect, it may still, amidst a choice of difficulties, be deserving of serious consideration, if not of trial, whether the exhibition of emetics, especially of a medicine possessing such power as the tartrite of antimony, might not produce some effect. It must be owned, indeed, that the practice of giving tartrite of antimony in cholera, has been subsequently abandoned by those who at first were most zealous in its support: but the grounds of this abandonment are probably referrible to the disappointment of a too hasty and sanguine expectation of success. The use of sudorifics, that is, of emetic substances conjoined with opium, comes recommended by more precise arguments. Their visible effects, in causing perspiration, would not indicate their employment in cholera; but their assumed action in determining the blood to the surface, which we suppose to be the precursory cause of the perspiration, is a most important indication. Those who have employed sudorifics with these views speak favorably of the practice. It will be highly desireable to obviate the nauseating effect of the emetic substance, an effect, it is believed, generally accompanied with a *cold* perspiration : the proportions of the emetic and the opiate should therefore be regulated in the view of determining to the skin, without nauseating the patient. The pulvis antimonialis, or James's powder might answer this indication better than any other preparation of antimony.

Purgatives.

When practitioners first observed the nature of the dejections in cholera, they, not unfrequently, imputed the absence of fæcal matter, to its *retention* in the intestinal canal ; and, under this persuasion, they resorted to purgatives. Others, though they knew that the fæcal contents of the intestines had been discharged at the first or second evacuation, and that no more was formed during the disease, still were of opinion, that the action of a purgative might supersede the choleric state, and thus aid in restoring the functions of that important canal. Accordingly, purgatives of various kinds, especially the cathartic extracts, and calomel have been administered with this intention. The practice still has its supporters, and merits farther observation and trial. There is one purgative, namely, castor oil, in the use of which a considerable degree of empiricism has obtained, occasioned probably by the very positive manner in which its virtues have been extolled. This medicine, in doses of half an ounce, combined with 15 to 20 drops of laudanum, has latterly been used in cases of natives with very considerable success by some Medical Officers ; and there seems sufficient evidence in its favour, when given in this way, to warrant a farther trial. Oil of turpentine has likewise been exhibited, but not so generally as to afford grounds for forming any conclusive opinion regarding its merits Being possessed both of a stimulant and purgative quality, it would seem deserving of farther trial.

The necessity of giving purgative medicines in order to obviate some of the sequelæ of cholera, has been generally recognised. The proper periods for their exhibition have been variously laid down. Those who are disposed to argue favorably of their general effects in the disease, prescribe them early, and in combination with their other remedies. Those who regard them as being useful in the sequel only, defer their exhibition. The choice of the purgative is a point of much more importance, probably, than the period of its administration. A formula comprising medicines possessing bitter and carminative qualities, conjoined with a purgative of which the effect is not a watery purging, is considered to be the most safe and advantageous. The infusion of senna, with gentian, or ginger, or cardamoms ; or, the senna infusion, with the tinctures of any of these articles ; the drogue amere, which is a tincture of aloes, myrrh, benzoin, &c. ; the various cathartic extracts ; in short, any purgative possessing the general properties of those enumerated, together with a moderate dose of calomel, either in combination with the purgative, or exhibited some hours before it, have all been employed, and with adequate success and advantage.

Glysters.

Glysters were more frequently used, when cholera first made its appearance, than they have, subsequently. There is not indeed, sufficient evidence to enable us to judge of the general applicability of the practice to this disease. When the object was to arrest purging, glysters, containing opium, either in the form of tincture or watery solution, were frequently administered. Glysters containing oil of turpentine have likewise been exhibited, with the view, apparently, of stimulating the intestinal canal, or the system at large The medical practitioner, who is guided by the general principles of his profession, will be at little loss to determine when, from particular symptoms, the use of glysters in cholera is indicated.

Magnesia
and other
Remedies.

Magnesia combined with milk, another of the empirical remedies, has caused considerable discussion : several instances will be found in the original reports and cases, in which its use seemed to be attended with advantage: but there is no doubt, from the evidence in possession of the Board, that it can merely be ranked as an adjuvant, and that only, of very limited powers. The impaired condition of the respiratory function, has given rise to suggestions for the use of oxigene gas, and nitrous oxide: but, unfortunately, there is no case recorded, in which either of these gases has been used. A remedy of this nature is certainly very strongly indicated; and although it is inapplicable to general practice, it might yet be highly deserving of trial in particular cases: neither are there any experiments recorded, on the effects of the galvanic, or electric fluids in cholera. The inhalation of the vapour of sulphuric æther has been tried, and though on a very limited scale, there appears ground to believe that it may be of use.

We shall only notice one more among the number of empirical remedies which have been brought forward. While many practitioners were anxious in their endeavours to emulge the gall ducts, and to set the functions of the liver in motion, the benefit of biliary fluid in the first passages was boldly attempted to be attained by administering the bile of animals, chiefly that of the ox. It is almost superfluous to add, that the practice, which never had many supporters, was, in the sequel, entirely abandoned.

Various plans of practice have acquired a degree of surreptitious reputation from the maxim, post hoc, ergo propter hoc: for there is, as has been already shewn, a lessened degree of fatality observable in cholera, towards the termination of its epidemic attacks. At the first invasion, all remedies appear to be unsuccessful. They are, perhaps, abandoned, and after various trials of other remedies, equally unsuccessful, recoveries begin at length to take place. These recoveries have been often attributed to the remedy last employed, which, in its turn, is destined to lose its repute, when it is subsequently tried in the more severe cases of the disease.

Drinks.

There was no point of practice more universally established by common consent, and yet apparently more questionable, than the interdiction of drinks or diluents, in cholera. They were almost uniformly considered to be inadmissible, chiefly on the ground, that the stomach refuses to retain them; and that keeping up, or doing any thing to renew the irritation of that organ should be avoided. But are we to pay no attention to the dreadful feeling of thirst, which forms so general, and so distressing a symptom of the disease; and are we to disregard the state of the body, robbed, as it evidently is, in most instances, of all its serous and aqueous parts? It certainly would not be safe to trust implicitly to the calls of nature; since the desire is not simply for drink, but for *cold* drink, which practitioners are unanimous and decided in stating to be, in the highest degree, dangerous, and almost always fatal.

The use of bland, diluent, tepid, and even acidulated fluids was early permitted, indeed, by some of our best practitioners, seemingly with advantage. There is reason likewise to believe, that during the interval, which has elapsed since the first appearance of cholera, a less rigorous inhibition of fluids has gradually obtained: but although a larger portion of drinks is now generally allowed, the absolute propriety of using them to the extent of dilution has not apparently, received that degree of consideration, which the importance of the subject demands.

The free use of diluents is indicated by the raging thirst, which prevails, and by the extent of the discharges, which evidently drain the system of a large portion of its serous or watery parts. They are counter-indicated by the irritable state of the stomach and intestines: and, doubts may be entertained of the power of the absorbent vessels, during cholera, to take up any portion of the fluids thrown in, so as to replace in the system, what has been wasted by the exhalents. With respect to arguments against the use of diluents drawn from the danger of their keeping up the irritation of the stomach and intestines, they will not be allowed to have the same weight now, which our notions of the disease on its first appearance certainly attached to them. Still, however, we should be careful so to time their exhibition and to proportion their quantities, that they may afford the best chance of relieving the patient, without needlessly provoking the stomach to reject them. Sudden and large draughts ought to be sedulously avoided, and those times chosen for their gradual exhibition, when we perceive the patient to be least disturbed by the state of his stomach.

In regard to the state of the absorbents, we can only reason from analogy : and then, we should be disposed to say, that, in common with most of the other functions, their's could not be unaffected : but we have no proof of the fact, or the extent, to which the affection prevails. The same argument might apply to the propriety of any one of our remedies : and finally, the extreme desire for fluids may be taken as an indication, that the absorbent system, which is the source of the desire, is not altogether effete. We observe the same dreadful thirst in all great hemorrhagies. We would therefore say, that tepid, diluent fluids should be freely, and even largely given in cholera, especially at the commencement of the attack, where the stomach is yet active ; and that the experience of many practitioners warrants the safety of using drinks, acidulated, either with the mineral, or vegetable acids.

Food. In a disease where such great nervous exhaustion prevails, it is obviously of much importance in the treatment to afford the speediest support to the patient by proper nourishment. We may readily combine the first steps of this intention with that which precedes, by using, as bland diluent fluids, the decoctions of barley, rice, sago, or arrow root ; and chicken water, or beef tea. When wine or spirits are administered, it will be adviseable to mix them with the diluent drinks, especially with the arrow root, or sago. In the native cases, where *caste* may interfere with the choice of food and drink, rice water, with a portion of some simple seasoning or very weak pepper water, will answer the purpose. Though it probably would not be safe, or at least of much avail, to be guided by the sensation of hunger, which sometimes prevails in cholera, and which is unquestionably a morbid sensation, yet we should not entirely disregard it. A little food should be given, and if the sensation be relieved by it, or if no obvious ill effects ensue, we should persevere. In ordinary cases, we may begin to give nourishment, independently of the drinks abovementioned, as soon as the disease appears to have yielded ; that is to say, when the natural functions are in any degree restored. We should cautiously avoid all substances, which are ascescent, or not readily digestible. Animal soups and jellies ; farinaceous and mucilaginous substances should be first trusted to. The quantities given at once should not be large, lest they oppress the stomach : nor yet should they be too small, and given at too short intervals ; for the incessant repetition of minute quantities of food is apt to fatigue and disorder the stomach. Nourishment should be made to stand in room of the stronger diffusible stimuli, and that as soon as practicable. In this view we should add spices and carminatives, and adopt, on the whole, a fuller plan of diet, than we do with convalescents under other diseases. When, however, evident marks of febrile reaction or inflammatory excitement take place, as sequelœ of cholera, the diet must be regulated accordingly.

Rest. It is of the greatest consequence in the treatment of cholera, to husband the patient's strength. All exertion of the muscles of voluntary motion should therefore be avoided as much as practicable. The exhibition of our remedies, and the means of enabling the patient to obey the calls of vomiting and purging should be contrived, likewise, so as to accomplish these ends with the least possible locomotion. The extreme restlessness, which so often prevails in cholera, must greatly tend to exhaust the patient, while the cause is probably too deep seated to admit of any considerable alleviation from external means. The frictions, however, recommended above, may possibly have a soothing and tranquillising effect ; though it must be admitted, that the whole process is generally diametrically contrary to the patient's feelings. Although his surface be of a deathlike coldness, he calls out, that he is burning with insupportable heat, and desires to be uncovered, and to be constantly fanned. The mode of using frictions requires the careful eye of the medical attendant, as much as any part of his plan of treatment If rudely performed, they will irritate and exhaust ; if persevered in, without discrimination, the patient will frequently be roused and kept awake, when he might otherwise have fallen into a slumber, an event which is always held to be very favorable in cholera. If frictions fail, and if gentle fanning appears to soothe and tranquillise the patient, it will probably be advantageous to yield to his wishes in this respect, taking care to avoid any unnecessary exposure of the surface.

General remarks.

Such is the outline of the practice recommended in cholera, drawn from a consideration of the reports made to the Medical Board. It is a disease extremely difficult to be treated, for, unless at the very commencement of the attack, the symptoms are, chiefly, what we have denominated, *negative*. In most other diseases, especially such as are of an acute and dangerous tendency, the Physician sees what he has to cope with. He observes certain *morbid actions*, the removal of which, permitting the restoration of the natural actions by the inherent powers of the living system, forms his plan of cure. This may be said to be the summit of the Physician's art. In cholera, however, we too often find the natural actions subdued, or annihilated, not by the intervention of *morbid* actions, but by a power directly affecting the *vitality* of the body. Hence, in all those cases, where we can trace only a depression of the vital and natural functions, in other words, where the symptoms are *negative*, our practice is singularly unsuccessful: but on the contrary, in those cases where, instead of mere suppresion, there are manifest and active disorders of some of the functions, our practice, directed to the removal of these disorders is much more satisfactory. Whatever we may have to do, must be done quickly. The frightful rapidity of this disease, and the general implication of functions which so fatally distinguish it, will not permit us to treat it in *detail*. Our remedial means must be employed as speedily as possible, so as to bring their united force simultaneously into action.

In conclusion, the writer and compiler of the present Report begs permission to observe, in extenuation of some part of the imperfections, with which it may be charged, that it has been drawn up under the disadvantages of frequent and long interruptions arising from the laborious duties of his public office. It was expected, that the tables in the appendix, obviously a work of much labour, would have been completed and printed off in 1821 They were therefore limited at first to the year 1820, at which period it was likewise intended to have closed the narrative. In consequence of the delays, however, which have occurred in the execution of the work generally, the tables have been extended so as to embrace the year 1821, and the narrative also has ultimately been extended to the close of 1822 Some of the original reports by Medical Officers, received during the years 1822 and 1823, have been introduced : but the observations during that period have been chiefly of a desultory nature, and not adapted for separate publication, even if the limits of the work, already swelled to an unlooked for size, had admitted of it.

The original plan of the Work, therefore, in which it was contemplated that the introductory report, the narrative, the original reports and cases, and the tables, would all be closed at the same period, has been necessarily abandoned : and several important remarks on the features of the disease have been drawn from very recent reports, the continuance of cholera in these territories having afforded but too much scope for observation.

The extent, to which cholera has prevailed in the army during the years from 1815 to 1822 inclusive, will be found at page 28 of the narrative. During the year 1823 and the first quarter of 1824 it has been as follows :

Years.	Europeans.		Natives.		Strength.		Remarks.
	Admitted.	Dead.	Admitted.	Dead.	Europeans.	Natives.	
1823	248	50	809	339	11,262	71,389	
1824	80	11	345	139	10,842	68,353	For January, February and March.

After all that has been written regarding this fatal disease, after all the researches into its causes and effects, perhaps we cannot give a more forcible and brief illustration of its character than in the following words of the Poet.

.... Wasteful, forth.
Walks the dire Power of pestilent disease.
A thousand hideous fiends her course attend,
Sick Nature blasting, and to heartless woe,
And feeble desolation, casting down,
The towering hopes and all the pride of Man.
To infant weakness sunk the Warrior's arm;
....the deep-racking pang, the ghastly form,
The lip pale quivering, and the beamless eye
No more with ardour bright :............
....nightly plung'd amid the sullen waves,
The frequent corse ; while on each other fix'd,
In sad presage, the blank assistants seem'd,
Silent to ask whom Fate would next demand.
............Man is her destined prey,
Intemperate Man ! and, o'er his guilty domes
She draws a close incumbent cloud of death,
Uninterrupted by the living winds,
Forbid to blow a wholesome breeze ; and stain'd
With many a mixture by the Sun, suffus'd
Of angry aspect..................
............The circling sky,
The wide enlivening air is full of fate.

Remedies being frequently alluded to in the reports, while no detailed instructions are given for their preparation, the following short formulary may not be unacceptable.

As proper measures for fluids are not always at hand, it is necessary to use spoons and wine glasses instead of them. An ordinary sized tea spoon contains one fluid drachm: an ordinary sized desert spoon contains three fluid drachms: an ordinary sized table spoon contains four fluid drachms, or half an ounce. An ordinary sized madeira wine glass contains two fluid ounces: a claret glass contains three fluid ounces: but some glasses will contain as far as three and five fluid ounces, respectively. In measuring laudanum, the ounce, or drachm measure glasses, the latter of which has a scale for *minims*, should be used in preference to any other mode. A fluid drachm of laudanum, or 60 minims, contains three grains and a half of pure opium. It requires between 130 and 140 drops of laudanum, drop'd from a small phial, to fill a drachm measure. Nineteen *minims* contain about one grain of pure opium, according to the London Dispensatory, page 718: and about 36 drops from a phial contain the same quantity.

No. 1. The spirituous vapour-bath.

Prepare a small rattan bottomed couch, or hospital cot, the frame of which should be raised at least thirty inches from the floor. It should have a flounce or valance, made of thick woollen, or cotton materials, fastened to the frame all round, and trailing about three inches on the floor. Prepare also two brass basins, each about ten inches in diameter and four inches in depth; likewise two brass evaporating cups, each about six inches in diameter and two in depth: these cups should have three small pegs or feet, to support them about an inch and a half above the plane they stand upon. When the vapour bath is to be used, a small blanket or quilt must be spread upon the couch: it should reach a little way over the ends and sides: a larger blanket or quilt must be in readiness to cover the patient. Half a pint of any strong spirit is to be put into each of the basins. Two ounces of vinegar, mixed with two drachms of camphor dissolved in rectified spirits and in some cases, a scruple of opium, are to be put into each of the evaporating cups. The basins, with the evaporating cups put into them, are then to be placed under the couch, one at each end. The patient being laid on the couch, and covered with the large blanket or quilt, the spirits are to be ignited. The heat presently becomes great. Two basins, used at once, will cause a heat equal to 126°: one basin will cause a heat equal to 113°. Few patients can bear the former; and almost all complain much, even of the latter degree of heat. Half a pint of good spirit will continue to burn for about seven or eight minutes: during this time the vinegar in the cup boils, and is about half wasted by evaporation. Two basins therefore, used in succession, will burn for 15 minutes, and produce every desirable degree of heat. The utility of the evaporating cup has been questioned. If camphor be dissolved in the spirit to be ignited, the combustion is a little *retarded*, and it forms a useful addition to prevent pilfering. There is hardly any sensible smell of camphor whether it be used in the boiling vinegar, or in the ignited spirit.

It is obvious that this mode of administering heat, however inapplicable to most cases of cholera may yet, in some inflammatory and spasmodic diseases, be a very valuable remedy.

No. 2. Hot water blister.

The easiest method of using hot water, either as a vesicatory, or merely as a rubifacient is this. Have ready a square pad of flannel, with pretty long tapes sewed to it, and crossed so as to bring one end out at each corner of the pad: the pad should consist of six folds of flannel, and should be about five inches square. The water being ready at the bed side of the patient, either at the boiling point, or at such lessened temperature as may be previously determined upon, the flannel pad is to be dipp'd into it. The operator holds the pad by the tapes; he should give it a smart shake on withdrawing it from the water, and apply it immediately to the skin. By shaking out all the superfluous water, the patient is saved from any scalding which might otherwise be occasioned by its dribbling down from the pad. If the water be used at boiling heat a momentary application of the pad will in general be sufficient to cause vesication. This point however must be regulated by the judgement of the practitioner, according to the state of the patient's skin.

No. 3. Nitric Acid blister.

The term blister has been improperly used in this instance, as the acid does not vesicate the parts to which it is applied, but acts on the skin like a cautery. See remarks on this subject, page 250. If the acid be at the specific gravity of 1,300, and if the skin of the patient retains its vitality in any considerable degree, a mixture of two parts of acid, and one part of water will generally be found of sufficient strength. The acid, thus diluted, is to be applied to the skin by means of a feather. If the skin becomes immediately discolored, (in Europeans it will assume a straw colour), and if the pain produced be sharp and *burning*, the application may be considered as having succeeded, and the part should immediately be sponged with tepid water; or the acid may be previously neutralised by the application of an alkaline solution. When we find that neither discoloration nor pain follows the application, the acid is to be used without dilution. The sulphuric acid may be also used, especially when we find the nitric acid fail.

With the hot water and acid at our command, the actual cautery, burning moxa, or lint or cotton steep'd in oil of turpentine and ignited, although they are powerful remedies, may probably be safely dispensed with.

No. 4. Sinapism.

Powdered mustard seed, half a pound
do. capsicum,
do. ginger, of each one drachm, make into a cataplasm with vinegar, to which add two ounces of oil of turpentine.

No. 5. Liniment.

Tincture of cantharides, two drachms
camphor, three drachms
soap liniment with opium, four ounces; mix.

No. 6. Liniment.

Powdered mustard seed, two drachms,
oil of turpentine, an ounce and a half,
olive oil, half an ounce: mix.

No. 7. Antispasmodic, stimulant tincture.

Opium, camphor, ginger, of each four drachms; capsicum, two drachms, spirit two pounds: macerate for six or eight days, and filter through paper.

This tincture comprises the qualities of those most commonly used in cholera as stimulant and antispasmodic. The dose is half an ounce, which will contain nearly as much opium as one drachm of laudanum. This tincture has been found very useful in families, and for distribution to native practitioners, and revenue or police servants, for the use of the native population. Small tin half ounce measures should be distributed along with it.

No. 8. Stimulant tincture.

Take the articles as above *without the opium.*

No. 9. Tincture of cloves.

Cloves, bruised, two ounces;
spirit, one pound and a half: macerate six days, and filter through paper.

No. 10. Clove mixture.

Tincture of cloves, twelve ounces,
brandy, sixteen ounces,
water, thirty two ounces,

nitrous acid, three drachms : mix. Two ounces for a dose.

No. 11. Antispasmodic mixture.
Camphor mixture, one pound,
laudanum, six drachms,
aromatic spirit of ammonia, three drachms; mix. Two ounces of this mixture is a full dose.

No. 12. Antispasmodic draught.
Camphor mixture, two ounces,
tincture of opium,
„ castor, of each half a drachm,
aromatic spirit of ammonia, twenty minims : mix.

No. 13. Antispasmodic cordial draught.
Brandy, one ounce,
water, one ounce and a half,
tincture of opium, fifty minims.
„ of capsicum, two drachms : mix.

No. 14. Calomel bolus.
Calomel, ten, fifteen, or twenty grains,
aromatic confection, one scruple,
add syrup of ginger, and make into a bolus, or paste.

No. 15. Pills for the use of the native population, adapted for distribution and exhibition by revenue or police servants, or native practitioners
Opium, one drachm,
camphor,
powdered capsicum, of each one drachm and a half--syrup of ginger, a sufficient quantity, to prepare the mass for pills ; divide into 30 pills. While they remain fresh and soft, these pills may be given without farther preparation : but when they have become hard and dry, they should be moistened and made into a soft paste or bolus ; or they may be broken down and given in a little thick conjee water. Two pills may be taken for a dose at the commencement, and one given afterwards, at intervals, if necessary.

No. 16. The following stimulating draught has been prescribed.
Powdered capsicum, one scruple,
powdered pepper, two scruples,
brandy, one ounce and a half,
water two ounces : mix.

No. 17. Acid mixture, according to a formula communicated to the Honorable the Court of Directors by Mr. Samuel Hope, Surgeon of His Majesty's Ship Ganymede, as a remedy for cholera.

" Take of nitrous acid one drachm, camphor water half a pint, mix and add 40 drops of tincture of opium, one fourth part to be given every three or four hours, varying time and quantity as judgement shall direct. A small addition of syrup of red poppies, when it can be obtained, improves not only the appearance of the mixture, but in some instances, I have thought its properties also. In dysenteries of long standing, one dose of two ounces, three times a day is sufficient.

The above medicine may be safely administered by persons unskilled in medical knowledge, is grateful to the taste, abates thirst, soon removes the intensity of pain, and procures generally, a speedy and permanent relief. No previous preparation is required for taking it, nor any other care while taking, than keeping the hands and feet warm, and preserving the body as much as possible from exposure to air, with drinks of warm barley-water, or thin gruel, freely taken, and a sago, or tapioca, diet."

The following "directions for the cure of cholera," have been communicated by a medical officer; they are detailed in a popular manner, and appear well suited for instructing individuals how they are to proceed in the absence of medical aid. They also present a concise and intelligible method of treatment for the guidance of subordinate medical servants, who are frequently called upon by circumstances to assume the charge of a patient labouring under cholera.

Directions for the cure of cholera.

Give the patient, as soon as possible, the draught prescribed thus:

Tincture of opium
sulphuric æther, of each one drachm
brandy, or arrack, half an ounce
water one ounce—mix.

If this be vomited, let it be repeated, every time, in ten minutes, after the vomiting. In half an hour, after the vomiting has ceased, give a bolus of this prescription:

Calomel, twelve grains
camphor, three grains
opium, one grain
oil of peppermint, two drops,
make into a bolus.

If this bolus be vomited, it must be repeated, in a similar manner each time, half an hour after the vomiting has ceased.

If the vomiting be violent, give an injection of one drachm and a half of laudanum in four ounces of conjee water: and let it be repeated as often as it is rejected. Half the quantity of this injection should also be administered after every liquid stool.

When no vomiting occurs at all, give a draught and bolus of the following prescription:

Tincture of opium,
sulphuric æther, of each half a drachm
ipecacuanha wine, half an ounce
water, two ounces, mix.

Calomel, twelve grains
extract of jalap, four grains
camphor, three grains
opium, one grain
oil of peppermint two drops
make into a bolus.

If these produce no effect, repeat the draught after every forty minutes.

In all cases rub the arms and legs with hot sand and apply a blister or sinapism * over the stomach, immediately after the first dose of medicine has been given.

If the pulse be perceptible at the wrist, take twenty, twenty-five, or thirty ounces of blood from the arm.

If the case be lingering and doubtful, after much medicine has been given, then omit all other medicines, but those prescribed thus:

Calomel, three grains
ipecacuanha, two grains
aloes, three grains
opium, half a grain,
make into a pill;
one to be taken every hour.

Conjee water, four ounces
brandy or arrack, three drachms—mix: to be taken every hour.

The patient, if thirsty, is to be frequently supplied with acid drink, a wine glassful of tepid water, acidulated with lime juice, or citric acid; or with nitric, or sulphuric acid may be given as often as the patient requires it.

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* See form No. 4.

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NARRATIVE

OF THE

PROGRESS

OF THE

EPIDEMIC CHOLERA

IN THE

PENINSULA OF INDIA,

DRAWN UP FROM OFFICIAL RECORDS

IN THE

OFFICE OF THE MEDICAL BOARD.

THE history of the origin and progress of Cholera, in the establishments of Bengal and Bombay, has already been given to the public, in the reports of the medical authorities of those Presidencies. During the period between the months of May and September, 1817, it appears to have, for some time, prevailed in the districts of Momensing, Behar, Nuddea, Jessore, Calcutta, Rajshahy; and, shortly afterwards, to have reached Balasore, and Cuttack. In November it prevailed at Mirzapore, Rewa, Sheergur, and other northern parts of Bundelcund. Jubbulpore, Saugor, Ougein, and Nagpoor, were under it's influence before the end of May, 1818. It reached Jaulnah, Aurungabad, and Ahmednuggur, early in July. During that month it extended to Seroor, and Poonah; and to the Presidency of Bombay about the middle of August. In the following historical sketch, the dates and local progress of the disease, in the territories of Madras, have been determined with due attention to the authority of the reports consulted; and, for the convenience of geographical reference, it has been successively traced along the eastern, middle, and western, districts, from the northern to the southern extremity of what is called the peninsula.

In these territories, it first appeared in the district of Ganjam. The Magistrate of that place, in a letter, dated 20th of March, 1818, states, that the inhabitants had suffered severely from fever, and cholera. It does not appear, however, that the Cholera was at all very prevalent in most parts of that district. It was pretty frequent at Aska from the 23d of April, until the 16th of May. At the latter period it suddenly disappeared; but it again manifested itself in the beginning of July, and during the month, prevailed more generally than it had formerly done. After November, few cases were observed in the Ganjam district, although the disease was then, and for a year afterwards, general in the contiguous district of Vizagapatam. Fever prevailed in several parts of the former district until March 1819. At Berhampore, Cholera was pretty frequent in September, and October, 1820.

No authentic information regarding the course of the disease at Chicacole, has been obtained; but it is known, that this place was not exempted from it's destructive influence.

No well marked case occurred at Vizianagram until the 20th of May; and then, the cases which did occur, continued to be slight, until the 26th. From this time until the 5th of July, the disease continued to prevail generally. For a month after it's commencement, though formidable in appearance, being attended by violent spasms of the whole body, it almost always yielded to the timely application of the appropriate remedies; but, during the remaining fortnight, although at first much less alarming, and without evident spasms, it frequently resisted every mode of treatment, applied even in the early stage. After the 5th of July, only a few slight cases occurred.

At Vizagapatam it appeared about the 15th of May. The weather is said to have been then oppressively hot, and the air loaded with humidity. It would seem that few Europeans were attacked after June: but the disease, differing occasionally in it's prevalence, and in the severity of the symptoms, continued to be general in Vizagapatam, and the neighbouring country, until February, 1820. It had somewhat declined in December, 1818, but became again very prevalent in March. In May, 1819, a greater number of cases were exhibited than in any other month; but the greatest proportional mortality occurred in April and November of that year.

It shewed itself at Rajamundry about the 10th of July; began to decline about the beginning of August; and disappeared early in November. It re-appeared at this place on the 25th of January, 1819, while an uncommonly cold wind was blowing from the south east; and it continued to prevail until the end of April.

It commenced it's attack at Ellore about the 5th of July, both on the 1st Regiment of Native Cavalry stationed there, and the native inhabitants. It was remarked that the Mussulman families were the greatest sufferers, although the population consisted principally of Hindoos. The greater mortality among the former was ascribed to their obstinacy in refusing proper medical assistance.

At Masulipatam, cases first occurred about the 10th of July. The convicts confined in the fort were the subjects of these cases; and, indeed, the disease, for some time, appeared only in one bomb-proof apartment. This one, was low, damp, ill ventilated, and very crowded; but, although these disadvantages were in some measure remedied, it continued to produce a greater number of cases than the other two, which were commodious and comfortable. The disease commenced in the town and neighbourhood about the 20th of July; was very prevalent during August; declined rapidly in September; and disappeared early in October, while the weather was chilly, and the rains heaviest. It was nearly confined to the lower classes of the people. It re-appeared at this place about the 15th of June, 1819, during extremely hot weather. This attack, however, was not so violent, nor of so long continuance, as the former.

In the several villages situated along the southern bank of the Kistnah river, from the eastern extremity of the Zillah of Guntoor, to the western extremity of the district of Palnaud, it seems, that it appeared nearly simultaneously, about the end of July; that it gradually extended southwards; and that, about the middle of November, 1818, it quitted that part of the country. It commenced about the beginning of the westerly rains, and continued until the termination of the rainy season. It is reported to have been more fatal during the prevalence of bleak westerly winds, than at other times; and in the villages situated in the vicinity of tanks, than at other places. The *Banians*, or Merchants, of the town Guntoor, who occupy the only wide and dry street in it, almost entirely escaped the disease; while the *Brahmins*, who inhabit a close and damp street, suffered in as great a proportion as any other class of the people.

In the most northerly villages of the Zillah of Nellore, this disease began to prevail on the 2d of August; and before the 5th of October, it had reached the most southern part of it; having in it's course appeared at the town Ongole on the 14th of August; and at the town Nellore on the 20th of September. The Zillah extends about 180 miles from north to south, and varies between 40 and 60 miles from east to west. In twelve days it travelled 32 miles, in the next twenty seven, 80 more; and, in two months from it's commencement, it spread over the whole Zillah, except the two south west divisions of it, which altogether escaped this visitation. These are the most elevated parts of the Zillah; they are populous; and much frequented by merchants. The disease indeed, was less fatal, than in the other parts, in the whole western frontier, which is near the hills; and, in some of the villages there situated, it did not at this time appear. There had been no sensible change in the atmosphere previously to it's approach; nor was it's progress at all affected by the occurrence of the rains. It continued during the rainy season; and, disappearing in the order in which it had commenced, it entirely quitted the Zillah before the 15th of January, 1819; it again became general in the northern parts of the Zillah about the middle of April, 1819, and continued to travel in a southerly direction, at nearly the same rate as formerly; having reached Ongole on the 16th of May, and Nellore on the 3d of July. In the Ongole district, it disappeared before the end of August, and in that of Nellore about the end of September. The period of it's continuance in any large town, or tract of country, of these districts, scarcely ever exceeded three months. At this time it was more prevalent and much more fatal than last year; and it was especially violent at those places, which then enjoyed an immunity. The weather was mild and temperate during the whole period of this second attack. There were occasional falls of rain; but no change in the sensible properties of the atmosphere seemed to affect the cause of the disease.

At Madras the first case seen by a Medical Officer occurred on the 8th of October; but, from the accounts of Natives, it then appeared, that some cases had occurred so early as the 5th of that month. It continued to prevail pretty generally in Madras, and the adjacent villages, until the 24th, when it received a temporary check from a violent storm that happened on that day. It very soon, however, increased again, and prevailed with a considerable, though variable, degree of violence until the beginning of November. It then began to decline slowly; and some time afterwards it became milder, and of rare occurrence. The poorer classes suffered more from its ravages than those in better circumstances. A detailed account of the state of the weather, during its prevalence, will be found in the meteorological tables. On the 5th, the wind was south easterly, the weather cloudy and wet, and there was much thunder. On the 7th the wind became north westerly, and it continued in this direction until the 12th; from the 12th to the 15th it was variable. The weather was cloudy, and much rain fell, from the 5th to the 15th. From the 15th to the 23d the wind was, with little variation, south easterly; and the weather generally pretty clear. The north easterly wind commenced on the 23d; and the violent storm, already noticed, occurred on the 24th. The weather though variable, was pretty frequently clear after this period. In April 1819, the troops at the Presidency were entirely free of the disease: but it re-appeared early in May; and, although it did not afterwards become general, it has continued to show itself occasionally since that period. Its attacks were most frequent during the hot months of 1819, and 1820; in 1821 they have been of more rare occurrence.

It appeared at Poonamallee on the 13th of October, and, without having become very prevalent, seems to have disappeared about the middle of the following month. From the 8th to the 21st of July 1819, many cases again occurred at this place.

At St. Thomas's Mount also, it appeared on the 13th of October; but although not very violent or general, it continued long at this station. It declined considerably in December, and continued to decrease until May 1819. It again increased in May; and, during the three subsequent months, was more prevalent than at any preceding period of its course. It declined in September, and early in 1820 became of rare occurrence.

It first showed itself at Wallajahbad about the middle of October; and continued to prevail with different degrees of violence, in H. M. 86th Regiment, and among the native inhabitants, during November and December. Several cases occurred there about the end of April, and a few in the beginning of May 1819; it became prevalent towards the end of June of that year, especially in H. M. Royal Scots; declined about the 8th of July, and soon afterwards disappeared.

The Cholera continued its progressive course along the coast; but we have no accurate accounts of the dates of its appearance, or decline, at Sadras or Pondicherry. It first manifested itself at Cuddalore about the 14th of November, after the commencement of the heavy rains, and continued to prevail, with considerable violence, till the end of December. At this time it declined rapidly, and soon afterwards ceased.

At Combaconum it appeared about the 20th of November; declined about the middle of December; and soon afterwards terminated. About the middle of January, it was, for two or three days, nearly as prevalent as it had formerly been.

It began to prevail at Nagore about the 10th of November, principally among the cast of natives, whose occupations obliged them to expose themselves much to the weather, which was then damp and rainy. Negapatam, although distant from Nagore only four miles, continued entirely free of the disease until the 22d of November. It was much on the decline at both places before the 20th of December. As at Combaconum, it was again very prevalent at these places for two or three days, about the middle of January. It reappeared at both towns about the end of July 1819; and continued prevalent until the middle of August. At Nagore it again showed itself about the end of October, and prevailed until the middle of the following month, and at Negapatam several cases occurred from the 1st to the 13th of February 1820.

Having thus traced the progress of this disease along the eastern coast, as far as it might be supposed to be connected with it's first appearance at Ganjam, it will now be necessary to give some account of it's course along the inland stations occupied by troops of this presidency. Here also we shall begin with the most northerly of these, which was likewise the first that became subjected to it's influence.

It began to prevail among the inhabitants of Nagpoor and the neighbouring villages about the middle of May 1818; but, although generally diffused, and productive of great mortality, among the citizens, with whom our native soldiery had frequent and intimate intercourse, no case of it appeared in the troops until the 26th or 27th of May. At this time three or four men of the Depot corps were attacked and died. On the 30th of May, a large detachment of Bengal and Madras Troops arrived at Nagpoor from the siege of Chandah, and took possession of the huts, near the Sittabuldee hills, which they had formerly occupied. Notwithstanding the excessive heat of the weather, and the laborious duties of the siege, they had hitherto been tolerably healthy; and no one had suffered an attack of the Cholera. Scarcely however had they taken possession of their quarters, when it appeared, in a very violent form, among the Bengal troops, and their followers.

Of the Madras troops only one individual was this day affected. On the 31st however it attacked them, and their followers, in a very violent manner, the majority of those this day affected having died. On the 1st of June the attacks were very numerous, but the deaths were proportionally much fewer. From the 2d it began to decline rapidly; and after the 10th, rarely occurred. For some days it was confined to the troops who had returned from the campaign; and, when it did appear in those who had not left Nagpoor, it was comparatively very mild and partial. The European part of the force suffered but little. A few of the Madras Artillerymen were attacked, but they all recovered. Three or four men of the Bengal Artillery fell victims to it. In a detachment of the force recently employed at Chandah, which was left at Hingumghat, 50 miles south of Nagpoor, it appeared at the same time, and followed the same course, as it did in the main body of the force at the latter place.

At Jaulnah, cases were first observed on the 3d of July, among the families of our native soldiery in the village. On the following day it attacked the troops, both European and Native: and from this time until the 11th, it continued very prevalent and violent. After the latter period, the attacks were milder and less frequent; and, before the end of July, the disease had almost disappeared at the station. Several facts, connected with the origin and progress of the disease at this place, having been adduced in proof of its contagious nature, it may be deemed necessary here to notice them. Since the middle of June, when several heavy showers of rain had fallen, the weather had been cool and pleasant; the thermometer ranging from 80° to 86°, seldom varying more than 4° in twenty-four hours. The atmosphere was generally cloudy, and the wind blew steadily from the south west. This kind of weather continued during the prevalence of the disease. A detachment, which had left Nagpoor while the disease was prevailing at that place, and of which some men suffered an attack of it in the march, arrived at Jaulnah towards the end of June. On the 3d of July, the Cholera, as has been seen, appeared at the latter place. The Russel Brigade arrived at Jaulnah on the 4th, and left it for Hydrabad on the 5th of July, without any case of the disease having appeared among them, but a few days afterwards, it attacked them, and produced great mortality. A party of gentlemen with about 1000 followers, arrived at Jaulnah on the 4th, and left it in good health on the 6th. Before they arrived at Aurungabad, however, many of their followers were attacked by the Cholera, and it began to prevail at that place soon after their arrival. The disease was most prevalent in the vicinity of the place where the first case occurred. H. M. Royal Scots, who were stationed immediately in the front of the general market place, in which the disease raged, and with which they had constant communication, suffered much by it; while the horse artillerymen, who were a considerable way in front, and had less direct communication with the market place, and but little intercourse with the Royals, suffered comparatively very little. This fact, however, has been ascribed to another cause. The artillerymen lived in tents, and the Royals in old and uncomfortable barracks. The latter were removed into their tents; and the cases, the day on which this removal was effected, were only one third of the number, that had occurred on the preceding day. The disease continued to decline after this period. When it appeared in a family, several individuals of that family generally suffered an attack. An endeavour will be made, in the proper place, to appreciate these arguments.

It appeared, on the 14th of July, in Lieutenant Colonel Heath's detachment, encamped in the neighbourhood of Nasseerabad south of the Taptee river, and among the inhabitants of the surrounding country.

In Lieutenant Colonel MacDowall's camp near Malligaum, in Candeish, it appeared among the camp followers, on the 13th of July. It attacked some men of the Madras European Regiment on the 16th, and from this day until the 23d, the cases in that corps were numerous, and very violent. After the latter period, the severity and frequency of the attacks were diminished. Several violent cases, however, occurred during August. A considerable number of people who had left Jaulnah during the prevalence of the disease, and some of whom were attacked on the way, arrived in the camp before any case had occurred in it. The 17th Regiment of Native Infantry, which composed part of this force, and its followers entirely escaped the disease. Over the ground of it's encampment, which was situated between two hills, a strong current of air is said to have then constantly blown. The European Regiment was encamped on lower and more confined ground, and, when the Cholera declined, a malignant bilious remittent fever became very prevalent in the corps.

Nasseerabad is about 80 miles N. N. W. from Jaulnah, measuring in a straight line on the map ; and Malligaum is about 100 miles from it, in a W. N. W. direction. We have seen that the Epidemic appeared at both these places in ten or eleven days from the date of it's first appearance at Jaulnah. These detachments had direct communication with the force at Jaulnah, and they present almost the only exceptions to the uniform progress of Cholera in a southerly course, on this side of India. In Sir John Malcolm's Camp at Mhow, Cholera is incidentally noticed as having attacked part of the force on the 16th July; but it would seem, from the Bengal Report, to have first appeared there in the course of the month of May, it's progress being from east to west. Mhow is situated near Indore, north of the Nerbudda, and is about 120 miles N. by W. from Nasseerabad ; the force was composed of the troops of different Presidencies ; it was independent of that at Jaulnah ; and there is no particular report in this office, of the manner in which Cholera made it's appearance there ; we may conclude however that the attack on the 16th July was unconnected with the appearance of the disease at places to the southward of the river Taptee.

It began to prevail in Punderpoor, on the 14th of July, while crowded by strangers congregated for the celebration of a great festival. Here, as at other places in similar circumstances, the mortality it produced was very great. It commenced it's attack on the troops in the vicinity on the 17th, and declined about the 24th of the month.

In the force encamped near Hoobly, in the Dooab, the first case of this Epidemic occurred on the 13th of August 1818. For some days afterwards, it was very partial, and confined to the camp followers. It seems to have appeared at Badamee and Darwar, nearly at the same time, as at the head quarters of the force. It continued to exist in the force till about the end of September; but was most prevalent from the 18th of August till the 1st of September. When it appeared, a strong wind prevailed from the south west, with heavy clouds and rain Neither Hoobly nor any of it's adjacent villages had at this time become affected ; nor had any person arrived in camp from the country north of the river Kistnah, in which Cholera was then prevailing. This force again experienced a pretty severe attack of it about the middle of April 1819, when encamped in the neighbourhood of Guddick. At the commencement of this attack, a strong easterly wind prevailed ; but in a few days the wind changed to the west. After this period the disease declined, the cases being fewer and milder, than during the preceding days.

At Bellary, it manifested itself on the 8th of September 1818 ; but until the 17th was partial, and confined to the native inhabitants. From this time until the end of the month, it's attacks were pretty frequent in the troops, both European and Native. It declined about the beginning of October, and disappeared from the European troops, on the 5th of that month. About the 20th of October it again attacked, with it's former violence, the troops and inhabitants, especially the lower fort, where it was more prevalent than in any place without, in the immediate neighbourhood : and it did not disappear till towards the end of November. The greater prevalence in the lower fort has been ascribed to it's confined and crowded state ; the barracks of the soldiery being surrounded by the huts and houses of the natives. Of five hundred prisoners in the public Jail of Bellary, only one was attacked, and he recovered. The jail is situated about twelve hundred yards eastward of the fort ; and is surrounded with a high stone wall. H. M. 34th Regiment commenced it's march from Bellary to Bangalore on the 17th of September ; no well marked case of Cholera having then occurred in the Regiment. One man was attacked on the following day ; but no case occurred on the 19th and 20th. Twenty-eight men of the corps were attacked on the 21st, twenty-four on the 22d; twelve on the 23d. From the 23d the disease continued to decline rapidly; and after the 29th no case occurred. Of about 700 men 91 were attacked, and of this number 37 died. The disease did not exist in any of the villages on the route, when the corps passed; but it soon afterwards appeared in all of them. Bellary suffered another attack of the disease, about the beginning of May 1819.

It appeared at Hurryhur on the 12th of September, and continued to prevail in it and the neighbouring villages till about the end of the month.

At Chittledroog the first case was observed about the middle of September, but, until the end of October, only a very few slight cases had occurred. From the 1st to the 15th of November, the attacks were pretty numerous, and frequently of fatal termination. During the remainder of November, a case occasionally presented itself.

At Bangalore, a few cases of the disease presented themselves towards the end of October, and during November; but it did not at any time prevail generally at this station. H. M. 69th Regiment commenced it's march from Bangalore to Cananore, on the 12th of October; no case of Cholera having then occurred at the former place. On the 20th, while encamped in the vicinity of the Madoor river, two men of a detachment of native soldiers accompanying the Regiment were attacked by Cholera: no European, however, experienced an attack until the 24th. This disease was pretty frequent in the corps from the 28th until the 13th of November. The weather had been generally rainy since the commencement of the march; and, when Cholera appeared, the vicissitudes of the weather were sudden, and the camp was nightly deluged with rain. The corps arrived at Cananore on the 18th of November. From the 12th, when the march was commenced, until the 28th of October, Dysentery was the most prevalent disease; but from the latter date until the 13th of November, Cholera maintained the ascendancy. After that period, till the 24th of November, Dysentery was again predominant, but, from the 24th until the 3d of December, intermittent fever, which had previously been rare, was the prevailing disease. No case of Cholera had occurred during the last interval. The intermittent was of the quotidian type: only two cases of remittent occurred. After the 3d of December Dysentery regained the ascendancy. Hepatitis also became more frequent. A statement of the number attacked by the prevailing diseases, during the intervals just specified will be found at the bottom of the page.

At Seringapatam, it appeared about the 6th of November 1818, and continued to prevail very generally about a month. It followed nearly the same course at the town Mysore, and in the intervening, and adjacent country. No authentic statement of the number of inhabitants, who suffered from this disease, has been received; but if common reports are entitled to any credit, the mortality must have been much greater here than in any other part of the country. The people, it is said, convinced that the disease was a visitation of the displeasure of one of their gods, were more anxious to propitiate the offended deity, than to apply for medical aid, which was freely offered to them. They flocked to the temples of their gods, and deluged the altars with the blood of numberless goats, rams,

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	Dysentery.	*Cholera.*	*Intermittent Fever.*
From the 11th to the 28th of October	22	5	2
——— 27th October to the 13th November	17	50	2
——— 12th to the 24th of November	27	10	8
——— 23d November to the 3d of December	8	0	33
——— 2d to the end of December	33	1	18

In October 6, in November 12, in December 18, were attacked with acute Hepatitis.

Ten cases of Cholera terminated fatally; three in October, and seven in November. In October Dysentery was not in any instance fatal, but in November three, and in December four men fell victims to that disease. All the cases of Fever and Hepatitis yielded to the remedies employed. Strength of the corps about 650 men.

and buffaloes ; and, having offered the head of the victim, they generally retired to regale themselves with the consecrated carcase. It is said, that, in many instances, having overcharged their stomachs with this food, they, the same night experienced a fatal attack of the disease. The performance of their superstitious rites subjected them to unusual fatigue, and exposed them to the vicissitudes of the climate, at the season when these were most frequent, and most violent. These causes to which the extraordinary mortality has been ascribed, must have had considerable influence : but it would be interesting to investigate, whether the climate of these places, which is notorious for fevers, might not have had some share in aggravating the calamity.

At Manantoddy in Wynaad, about thirty cases occurred from the 16th to the 22d of October 1818. The weather during these days was cloudy, and a strong, cold easterly wind prevailed.

It commenced it's course in the district of Coimbatoor towards the end of November 1818, and soon became very prevalent and destructive in the villages situated in the vicinity of the Cavery river, particularly in Errode and Carroor. It reached Coimbatoor on the 30th of November. It declined in December; and had almost disappeared by the end of January 1819. Cases seem to have occasionally occurred until October following, when the disease again became very prevalent. It declined in November, and disappeared in February 1820. The endemic fever existed during the prevalence of Cholera ; and as the latter disappeared the former became pretty general throughout the district. The fever, however seems not to have been severe ; a small proportion of those attacked having died. It will now be necessary to revert to the northern parts of the centre of the peninsula.

Cholera attacked the Mysore Horse on the 8th of July, while on the bank the Godavery river, on the route to Hydrabad ; and it continued to prevail in the Corps until towards the end of that month.

At Hydrabad, it appeared towards the end of July ; but it was not so prevalent nor so violent here, as at the greater number of other stations. The cantonment enjoyed an immunity for many days after the disease had had become prevalent at the Residency, distant about five miles ; and those first attacked were soldiers who had returned from duty at the Residency. It prevailed also several days in the market place, called *Begum Bazar*, before it reached the city of Hydrabad, although these places are separated only by a small river. Many cases occurred in the cantonment at different periods subsequently to this attack, but the disease did not afterwards become general. The circumstances of one of these subsequent manifestations seem sufficiently interesting, to require a more minute statement. A detachment of Europeans, in which Cholera was prevalent, arrived at this place early in May 1819, and was encamped about two hundred yards in front of the quarters occupied by the Artillery. The disease did not at this time exist in the cantonments ; but, three or four days afterwards, it appeared in the party of Artillery, five or six men of which soon suffered a severe, though not in any instance, a fatal attack. The wife of a Conductor of Artillery next became a subject of the disease ; and a female friend, who attended her for two hours, was also attacked, and died next morning. The son of this woman, aged six years, suffered an attack the day after the death of his mother : he recovered. One Assistant, and two Sub-Assistant Surgeons, who had spent much time with the sick, were attacked and one of the latter died. The disease soon appeared in the market places, in which it proved fatal to several natives. Few cases occurred in the native Corps stationed at this place ; and H. M. 30th Regiment, which was in barracks about half a mile to the right, entirely escaped the disease. The detachment which had marched from Madras, was attacked with Cholera at the river Kistnah, after exposure to a severe storm of wind and rain ; and it continued to infest them on the route to Secundrabad. The villages on the road were, at this time, free of the disease : but a Medical Officer who travelled by the same road from the Kistnah to Secundrabad, about two weeks afterwards, found it prevailing in every village. The inhabitants asserted that it had commenced after the passage of the detachment, which they believed, had communicated it to them.

It first appeared at Gooty on the 6th of October 1818; and cases occurred occasionally until the beginning of February 1819. It does not seem, however to have been then prevalent at that place. The 2d Battalion 16th Regiment Native Infantry, stationed at Gooty, as well as the inhabitants of the place, experienced a very fatal attack of Cholera in February 1820. It appeared on the 2d of the month, immediately after the departure of the 1st Battalion 16th Regiment; in which it had proved very destructive during the march from Hydrabad, and in which it prevailed during a halt of three days at this place. It declined on the 20th, and was of rare occurrence after the end of the month. Early in March, however, it began to affect the inhabitants of the neighbouring villages. Of one hundred and one cases, among the men of the 2d Battalion 16th Regiment, admitted into hospital during February, seventy-five terminated fatally. No case had occurred at this place during the six preceding months. It was observed, that a great number of the attendants of the sick were attacked; and that generally when one case occurred in a family, several members of that family became subsequently, and often almost immediately, affected.

At Cuddapah, it first manifested itself on the 9th of October, but it does not appear to have become general there.

It appeared at Tripetty on the 1st of October, during a festival; and it soon carried off a considerable number of victims.

At Chittoor it shewed itself early in October, and it was said to have prevailed, for some time, pretty generally in the district.

The first case of Cholera observed at Vellore, occurred on the 3d of October, but very few were affected before the 18th of that month. From the latter period till towards the end of December, its attacks were pretty numerous. It does not however, appear to have been nearly so prevalent here as at the neighbouring stations of Chittoor, and Arcot.

This Epidemic appeared at Arcot about the 13th of October; and was generally prevalent until the 23d. At this time it suffered a slight remission, for although it continued during the remainder of that month, and all the following month, the attacks were not so numerous, nor so severe as during the preceding period of its course. It appeared on the day on which the wind changed from the south west to the north east, or monsoon quarter. The weather, after this period, was variable; the wind blew in sudden squalls, and torrents of rain fell. The sky was generally overcast, and although the Thermometer did not fall lower than 74° at noon, a peculiar chilly sensation was felt. On the 22d, a strong gale of wind, accompanied with rain, blew from the south west; and on the following day, as has been mentioned, the disease had considerably abated. This disease re-appeard at Arcot about the beginning of May 1819 and shortly afterwards at Vellore and Chittoor; but it does not seem to have been very prevalent. It left these places about the beginning of July.

It seems to have entered the Barahmaul, and Salem districts, from the north west, about the middle of November, and, at an early period of its course, to have carried off many of the inhabitants of the villages situated on the banks of the Cavery. It showed itself at Sankerrydroog on the 19th of November, and began to decline about the beginning of December. On the 22d of November, it appeared at Salem. The weather, for ten days preceding, had been cold, cloudy, and rainy, and the wind was piercingly sharp. Here, as at other places, it first prevailed among the poorest and most destitute class of the people. It continued very general until the 14th of December; but, after that period, it declined rapidly, and before the end of the month, cases were of rare occurrence. Of the prisoners in the jail, who were exempted from their usual labour and exposure during the prevalence of the disease, only nineteen were attacked, and of these only two died. The inhabitants of the large hills, in the neighbourhood of Salem, prohibited any communication with those of the valley ; and it is said, that they enjoyed an exemption from the visitation with which the latter were afflicted. Whether this immunity is to be ascribed to their precaution, it is not in this place, our business to enquire. It reappeared in a moderated degree, at Salem, and Sankerrydroog towards the end of August 1819, after a long continuance of rainy weather.

The first case of Cholera observed at Trichinopoly, occurred about the end of October, in one of a Company of native Soldiers, which had entered that place from the northward. Two men of the Company had previously died on the march, in consequence of attacks of Cholera ; and this man, who also soon died, was attacked before his arrival. On the 1st of November, another fatal case occurred in the village of Pootoor. About the 5th, several persons, especially of the washermen's families were attacked in the neighbouring villages of Warriore and Pootoor ; and some of them died before assistance could be procured. A few fatal cases at the same time occurred, on the outside of the north west gate of the fort, towards the river. From that period the number of cases daily increased, and the disease gradually extended itself from the north west, to the south east gate of the Fort. On the 9th it manifested itself in the barracks of the European Pensioners, and Native Veteran Battalion, situated in the immediate vicinity of the river-gate of the fort ; about the 13th, in the artillery barracks, situated on high ground on the southward of the fort ; and on the night of the 16th in the barracks of H. M. 53d Regiment, situated on elevated ground on the south west side of the cantonment. It continued to increase in prevalence until the 20th : but after the 22d it began sensibly to diminish ; and soon afterwards declined rapidly. About the middle of January 1819, it recurred, in a moderated degree; but after two or three days it began speedily to disappear. Many cases were reported to have happened among the native inhabitants of the town and neighbouring country, in July 1819; and in some parts of the district during August and September. The disease showed itself again at this place about the middle of November ; and it prevailed to a considerable extent in the early part of December 1819.

It reached Tanjore and its neighbourhood about the 20th of November, soon became very frequent, continued to increase irregularly during December, and attained its acme about the middle of January 1819. It began soon afterwards to decline ; but its decrease seems to have been slow, and irregular. It did not disappear until April 1820.

Continuing its progress to the south, it appeared at Madura about the end of November, and soon became diffused over the adjacent districts of Dindigul and Ramnad. Its course in these districts, has been irregular, and protracted so long, that in some places, it did not cease to be general until March or April 1821. At several places it had declined and almost disappeared, but returned without any evident cause ; it was very general and destructive, over the whole of the Madura district, in the month of June 1819. In the districts of Madura, and Dindigul, the endemic fever prevailed to a great extent at the same time with the Cholera.

At Palamcottah it began to prevail in the beginning of January 1819 ; and it had declined considerably before the end of that month. It disappeared from the inhabitants, and troops previously stationed there, early in February ; but the 1st Battalion 15th Regiment, which had returned from Ceylon, continued to suffer from it till near the end of that month. It was sometime afterwards reported by natives, that the disease prevailed in different parts of the surrounding country, but no cases were again observed at Palamcottah until the beginning of September. Many cases occurred here in September, and December 1819, and in January, and the latter part of April 1820. It prevailed also, to a considerable extent in the town Tinnevelly in April 1820.

Having now given some account of the course of this Epidemic along the eastern, and interior territories of this Presidency, it only remains to advert to its progress along the Malabar coast.

It seems to have prevailed at Hullyhall and Soonda early in September 1818, and to have continued there for several weeks. These places are situated to the west and south of Darwar, where it has been seen, the disease was prevalent during the latter part of August.

Some cases occurred at Mangalore, especially among the prisoners, from the beginning, to the 20th of September; but the disease did not then become general. It recurred with considerable severity on the 8th of November, and did not disappear till towards the end of January 1819.

It reappeared in March 1820 in the frontier towns of Soonda, having spread, according to report, from the adjacent Maratta States. In June it had extended southwards to Mangalore. The symptoms were extremely violent, and caused death in many instances, in two hours. The mortality was very great, and the inhabitants fled in terror from their villages to the jungles.

Cases were first seen at Cannanore on the 5th of December. The subjects of these cases lived in a place near the beach, and on the side of the town next to Tellicherry, where the disease had for some time prevailed. The disease immediately became pretty prevalent in the town, and soon afterwards in the neighbouring villages. In the former it began to decline about the 14th, and in the latter a few days afterwards. It seems to have disappeared before the end of the month: at most, only a few partial cases afterwards occurred. A much greater quantity of rain than usual is said to have fallen at this place in the preceding Monsoon, and during October, and the greater part of November, the weather is said to have been calm and sultry. Towards the end of the latter month, the land wind began to blow with some force, the atmosphere was cloudy for a few days; some rain had fallen, and the night air towards the morning was so chill, that the natives complained of the cold. No case had occurred in the fort during the prevalence of the disease, but about the 10th of February 1819, several of the prisoners in the jail were unexpectedly attacked. In the course of the seven following days, twenty-nine of these people were attacked. The disease then disappeared, without having extended beyond the jail.

About the middle of November a great alarm was created among the inhabitants of Tellicherry by the exaggerated accounts of the mortality produced by the Cholera at Mangalore, and in H. M. 69th Regiment, then approaching Cannanore. Very few cases, however, occurred until the 25th of November. During December it prevailed to a considerable extent among the poorer classes of the people, especially the beggars, and fishermen of the lowest order: and of these the aged, and infirm, and dissolute were the greatest sufferers. No soldier, policeman, or prisoner, was attacked. The disease disappeared early in January. The weather in November had been variable; rain having occasionally fallen, and a strong southerly wind having sometimes prevailed. The Thermometer was from 74° to 82°. About the middle of December the weather became dry and agreeable, the wind blew from the land; but this favourable change did not seem immediately to influence the prevalence of the disease.

This disease it was reported, became prevalent, in different districts of the province of Calicut in October. At Calicut two cases had occurred in May, but it would seem, that no more cases were observed there till about the middle of October. Towards the end of December, its symptoms, which had hitherto been moderate, became much aggravated, and its attacks more frequent. The prisoners and police corps now began to suffer. It declined considerably in February 1819; but it continued to exist, generally in a less severe, and less prevalent degree, in some districts of the province until October following.

In July and August it was more prevalent and violent than during the interval, which had elapsed since the commencement of its decline. The poorest of the people, who suffered great privations, were chiefly its victims.

It appeared in the neighbourhood of Cochin about the 8th of December, and immediately became pretty general. It declined towards the end of the month, and disappeared early in January 1819. Some partial cases occurred among the Soldiery in March, April, May, and July 1819.

It seems that several slight cases occurred at Allepey early in October, and that the disease became pretty prevalent there about the beginning of November. Several cases appeared also, in July following.

At Quilon it began to shew itself about the end of October, and continued to advance slowly until the middle of November. It then declined; and without having prevailed to any considerable extent, soon afterwards disappeared. Only four Europeans were attacked, although an European Regiment, and a detachment of Artillery were stationed at this place. Some troops on their march from Palamcottah to Quilon, in January and March 1819, experienced a visitation of the disease. In July and August following, many cases occurred in the 89th Regiment, and among the native inhabitants. It was reported to prevail in the northern parts of Travancore nearly at the same periods at which it visited Quilon.

It seems to have reached Trevandrum about the middle of January 1819. Slight cases of Cholera had been frequent there in May 1818, and a few had also occurred towards the end of August, and early in September. From this place it gradually extended south to Cape Comorin. Reports of its prevalence at different places in the southern part of Travancore were made during the first-half of 1819; but as the veracity of these depended on natives, no correct estimate of its violence, or prevalence can be formed.

The preceding narrative embraces the principal occurrences of Cholera during the years 1818, 1819, and 1820, as they affected the soldiery in quarters and the fixed population of places within the territories of this Presidency, or those connected with it. The information regarding bodies of troops under movement, for the greater part of that period, is incomplete.

Epidemic attacks of Cholera during the years 1821 and 1822 have happily been very rare amongst the fixed inhabitants, or the troops in quarters. The disease appeared along the coast in the vicinity of Cuddalore in January 1821; and at Royacottah in February; but it did not continue long at these places, and it caused very little mischief.

It appeared in the lines of the 2d Regiment Light Cavalry, stationed at Kulladghee in the Dooab, on the 1st of June, and it continued to prevail amongst the men and followers till about the middle of the month; the disease was characterized by rapid depression of the powers of life; the proportionate mortality was great, 28 men having died of 78 who were attacked; there was nothing particular in the state of the weather at the time. It is remarkable, that the disease prevailed at the same period, in the village of Bagricottah about 12 miles distant; while two corps of Infantry, the 2d Battalion 19th Regiment, and the 2d Battalion 3d Regiment, situated between that village, and the lines of the Cavalry, and about a mile from the latter, entirely escaped. It subsequently appeared about the beginning of August, in one of these corps, the 2d Battalion 19th Regiment; 21 cases only occurred, of which 6 proved fatal; one man of the 2d Battalion 3d Regiment was attacked, but it appeared that he resided in the lines of the former corps. In June, the corps at Darwar also suffered an attack; 28 cases occurred, of which 15 proved fatal.

The disease prevailed to a considerable extent in the district of Canara, in the months of July and August, and the mortality was again very great in proportion to the numbers attacked; the northern parts of that district appear indeed to have suffered in an uncommon degree, both from the frequency, and the virulence of the attacks of Cholera.

It continued to occur, from time to time, at almost every station under this Presidency during the year 1821; but the cases were by no means numerous in general, at any one period, nor, with the exceptions already given, and those of marching corps, could it be considered to have assumed the form of an Epidemic. The cases were most numerous in the Southern Division, especially at Salem, Sankerrydroog, and Madura, where fevers were also prevalent.

It appeared at Salem with considerable severity in January 1822. Two cases had previously occurred on the 28th December; it attacked the prisoners in the jail on the 5th of January, of whom 64 were taken ill, and 36 died; it disappeared on the 22d of that month. Between 200 and 300 of the inhabitants of the Town are stated to have suffered attacks of the disease, of whom a great number perished. It appeared also in January, at Samulcottah, first attacking the Sepoys of the 1st Battalion 21st Regiment N. I. and their families; and then the inhabitants of the town. The disease is stated to have commenced immediately after the junction of two considerable detachments, one from Masulipatam, and the other from Chicacole; but it does not appear that any case of it had previously happened in either of these detachments on the march; nor that it existed at the stations whence they had come; the first persons taken ill belonged to Samulcottah, but it is said that they associated much with the new comers.

The disease appeared in the beginning of March, among the multitude of people assembled at Tutocoreen for the annual pearl fishery. It is stated that upwards of 100,000 persons were collected on this occasion; many of these were travellers from distant parts; most of them exceedingly poor, and badly fed; miserably accommodated in temporary huts; exposed to great heat during the day, and to heavy dews at night; the water of the place was brackish, and the opportunities for intemperance, numerous, and pretty generally within their reach. The occupation too of a considerable proportion of these people, as boatmen, fishermen, and divers, would seem peculiarly to have exposed them to attacks of Cholera; yet notwithstanding all these circumstances, the disease did not gain much ground; not more than 187 people died of it, out of that immense multitude, about 443 persons having been attacked; it disappeared in April, with the breaking up of the fishery. The most prominent symptoms observed in this instance, were an immediate sinking of the circulation; total loss of strength; cold surface; profuse sweat; and collapse of the countenance; vomiting was neither frequent in occurrence, nor severe when it did occur; spasms of the muscles of voluntary motion were entirely absent; after two or three watery stools, the patient sunk, and death ensued, very generally, in six hours from the commencement of the attack. There appeared to be nothing uncommon in the state of the weather.

Upon the whole, Cholera has been less prevalent during the year 1822, than it was in 1821. At many stations, several months have passed consecutively, without a single case of it having occurred; and if we except some particular places, and the camps of marching corps, it might be said to have nearly disappeared. The particular places here referred to, are Arcot, Wallajahbad, Salem, Sankerrydroog, Trichinopoly, Madura, Calicut; which have continued, since the first appearance of Cholera, to exhibit a greater number of insulated cases than any of the other stations.

In drawing up this narrative of the progress of the Epidemic Cholera in the Peninsula, it has not been found practicable to give a particular account of those attacks which various marching regiments are understood to have experienced, during the years 1818, 1819, and the early part of 1820, as the materials on record in this office respecting them, are extremely scanty and defective. During these years accordingly, the narrative relates, almost exclusively, to the occurrences of Cholera amongst the civil inhabitants, and the soldiery in quarters. Since the middle of the year 1820, the information respecting corps on the march has been tolerably complete, and as the history of the disease, as it affected moving bodies, presents several striking circumstances, it has been purposely reserved for separate recital.

It will be interesting however, in the first place, to state the mortality occasioned by Cholera in corps on the march, antecedent to 1820, for the purpose of comparing it with that of succeeding years; not many instances indeed can be given, and in these, very little is known of the attendant circumstances The 2d Battalion 19th Regiment Native Infantry, marched from Quilon for Bellary, towards the end of January 1819; the route appears to have been by Cochin, Calicut, Tellicherry, the Periah pass, Seringapatam and Serah. Cholera appeared at the commencement of the march, but not with violence, as during all February, there were only 49 cases, of which 6 terminated fatally; it continued to occur moderately, until the 19th March, when the corps must have been well advanced through Mysore; on that, and several succeeding days, it broke out with violence; about 140 cases were admitted in March, of which 44 terminated fatally; the disease ceased in that month. There is no account of the sufferings of the camp followers.

The 2d Battalion 23d Regiment N. I. on its march from Cannanore to Nagpoor, experienced a most fatal attack of Cholera, on the road between Gooty and Hydrabad; the corps had reached the former place in the month of November, without a case of the disease; it began almost immediately after that, and 159 men died of it, by the end of the month; it continued, but in a greatly mitigated degree, in December; 14 men died of it in that month. There is no medical record respecting this corps for the months of November and December 1819, not even the usual sick returns. It is remarkable that a considerable detachment from Madras, which followed one, or two days march in the rear of this corps, during the period of its greatest suffering, escaped the disease altogether.

The 1st Battalion 5th Regiment N. I. marched from Quilon on the 25th November 1819, on its route to Bangalore, by the way of Coimbatoor, and the Guzlehutty pass. Cholera appeared on the first day of the march, but in a mild shape; only 9 cases were admitted from the 25th to the 30th of the month. In the following month it broke out with great severity, but it diminished sensibly, after the corps had ascended the table land of Mysore, which it did on the 26th December; during that month 180 cases occurred, of which 83 were fatal; in January 1820, the disease ceased.

The 1st Battalion 18th Regiment N. I. marched from Madras in November 1819, on route to Seringapatam; a few cases of Cholera occurred while the corps was below the Ghauts; they ascended the table land of Mysore on or about the 20th, after which it became much more frequent; it continued till December, but had finally ceased by the end of that month; 74 cases were admitted, and 41 of these terminated fatally.

It has been already observed, that the information respecting marching corps prior to the middle of the year 1820 is very incomplete; such however as the records afford is here given.

Cholera was pretty frequent and very fatal in the 1st Battalion 16th Regiment N. I. on its march from Hyderabad to Gooty, from the 19th, until the end of January 1820. At the latter period the corps had reached Gooty, where it halted for three days. The disease declined in the beginning of February, immediately after the corps left Gooty; and it was of rare occurrence during the remainder of the march to Trichinopoly. It was not attended by pain or evident spasms; nor were the evacuations either by vomiting or dejection, generally frequent : but the vital powers were early depressed, and rapidly exhausted. Of 90 men attacked, 49 died. Sixteen cases, of a less severe nature, had occurred in December, on the march between Nagpoor and Hydrabad. Fever was frequent, but not severe in December, and, in January and February, both Fever and Diarrhæa were as frequent as Cholera, but neither of them in any instance fatal.

The 2d Battalion 8th Regiment N. I., on its march from Secundrabad to Madras, arrived on the north bank of the river about six miles from Cuddapah, on the 16th of May, 1820 ; having been healthy during the march. This river was so full as to be difficultly passable. On the 17th, however, the Corps crossed it. During this day several men were attacked with Cholera. The cases, though not very numerous, were frequently fatal. On the 18th, the march towards Madras was continued. From the 17th until the end of the month, when the disease disappeared, 36 men of the corps, were attacked, and of these 20 died. It was estimated that 150 of the camp followers had perished during the same period. Cholera did not exist in any of the villages or towns, through which the corps had passed, between Cuddapah and Madras.

A detachment of about 350 Europeans left St. Thomas' Mount towards the end of April, 1820, and, notwithstanding the exposure to a most violent storm of wind and rain on the 9th, and 10th of May, the men continued very healthy until they reached Cuddapah. On the 18th they encamped near Cuddapah, on the ground which the 2d Battalion 8th Regiment N. I. had that morning left, and halted there three days. It was the lowest ground near the town : and, when the detachment took possession of it, the bodies of several of those of the 8th Regiment, who had died of Cholera, still remained unburied. On the 19th, one of the men was attacked with Cholera ; and the disease immediately became pretty frequent, and very fatal. From this time until the 11th of June, 47 were attacked, of whom 22 died. The detachment had continued its march towards Secundrabad.

The 2d Battalion 7th Regiment N. I. on its march from Palamcottah to Cannanore, during the months of April and May, experienced a severe attack of Cholera towards the end of the former month ; the disease disappeared before the termination of the march, after having carried off about 90 men of the Corps, besides camp followers, who suffered much. The numbers taken ill with Cholera in April, are not known, but 41 men died in that month ; in May 90 cases were admitted, of which 47 died, making the total loss 87 men.

The 1st Battalion 17th Regiment N. I. commenced its march from Cannanore to Hydrabad in May, by the route of Seringapatam, Serah, and Bellary. The disease made its appearance in the Corps in May, and continued to prevail with some severity during June, but ceased altogether in July, before the end of their march. There appear to have been 330 men taken ill, of whom 82 died. The mortality amongst the camp followers is not known.

The 1st Battalion 19th Regiment N. I. experienced a very fatal attack of Cholera, in the Mysore territory, while on its march from Cannanore to Nagpoor in June 1820. One case occurred on the night of the 14th at the town Mysore; thirteen the subsequent evening, at Seringapatam ; and the disease immediately became general. It continued prevalent till about the end of June, when it suddenly disappeared, nor did it return at any subsequent period of the march. During the latter half of June, of 920 men, 234 were attacked, and 116 of this number died. The Corps had continued its march through Mysore, and on the 1st of July had reached Serah.

The 2d Battalion 22d Regiment N. I. commenced its march from Madras to Bangalore on the 9th of June, 1820 ; and had prosecuted it, in a healthy state, until the 29th, when it arrived at Colar. Here the Cholera unexpectedly appeared, and suddenly became pretty general. The Corps left

Colar the following day, and was detained at Ooscottah from the 3d to the 26th of July. The disease began to decline on the 4th of July; and after the 6th rarely occurred. After the 16th no case presented itself. Of this Corps 138 men were attacked, and of that number 74 died. The disease first appeared among the followers; and it was observed, that, in the Corps, it was almost confined to the privates, who were much exposed to the vicissitudes of the weather; and who, from their own improvidence, had not the means of procuring proper sustenance. After advancing a few days march from Madras, a hot westerly wind prevailed during the day, and a squally shower generally fell in the evening, which cooled the air considerably, and which was succeeded by a calm that continued during the remainder of the night. A little before sunrise, the wind again began to blow; and, in consequence of the rain which had fallen the preceding night, the mornings were cool, pleasant, and refreshing. As the day advanced, the wind increased, became hot, peculiarly sharp, and penetrating; producing debility, and relaxation. After ascending the Mysore country, such a reduction of temperature was experienced, as, in the mornings, and evenings, to render necessary a considerable augmentation of clothing. When the disease appeared at Colar, the air was chilly and damp. That town is overhung on the north-west by large and lofty hills, the tops of which are, in the evenings, and mornings, enveloped by thick clouds. It is open to the eastward, but closely surrounded by large tanks, rice-fields, and so much wood, that room could with difficulty be found for the encampment of a Regiment. Slight attacks of Fever and Diarrhœa were the most frequent diseases, previously to the commencement of Cholera.

The 1st Battalion 7th Regiment N. I. marched from Jalnah on the 15th June, by the route of Hydrabad, Bellary, and Chittledroog, to Mangalore, where it arrived on the 4th of November. The weather, during the march to Hydrabad, was very rainy and boisterous, and the ground of encampment generally wet; about 60 cases of Cholera occurred, of which 18 terminated fatally. The Corps having halted nearly a month at Hydrabad, resumed its march on the 13th August; but although the weather was still inclement, they experienced no further attack of the disease. The Medical Officer observed nevertheless, that it existed in the villages on their route, which was the same, for the greater part of the distance, as that, he had followed shortly before, with the 1st Battalion 17th Regiment, which had suffered so heavily. He imputed the present exemption to their not moving off the ground until the sun was fairly up; to the men being thus enabled to take some warm food before setting out; and to their being taught to examine their evacuations, and to apply for medicine, whenever these appeared unusually white; this officer, and some others, having conceived, that Cholera was always preceded by a suppression of the secretion, or excretion, of bile.

The 1st Battalion 20th Regiment N. I. marched on the 8th of July from Secundrabad, by Gooty, Ooscottah, and Salem, to Palamcottah, where they arrived in the beginning of November. This Corps commenced its march while Cholera existed in it; but although the disease continued occasionally to appear, from twenty to thirty men being affected by it during the march, it was generally mild, and only one case proved fatal. Other corps travelling by the same route will be seen to have suffered most severely.

The 1st Battalion 22d Regiment N. I. marched from Hydrabad on the 2d of August, and arrived at Masulipatam on the 1st September. The weather was extremely rainy, and the ground wet; Cholera appeared shortly after they marched, and continued till the 24th, when it ceased; the weather at the same time became settled; 69 cases occurred, and 19 of these ended unfavourably.

The 2d Battalion 21st Regiment N. I. experienced a slight attack of Cholera on the march from Masulipatam, which it left on the 4th September, to Madras, where it arrived on the 13th of October. During the first part of the march the weather was very rainy, and the ground muddy, and wet, but at this period there was no appearance of Cholera. The disease afterwards appeared when the air was dry, and the sky serene, and when the route lay near the sea shore; 24 cases only took place, of which 3 proved fatal; about 70 followers were attacked, and 11 died.

Cholera was very general and fatal in the 2d Battalion 20th Regiment N. I. in October, 1820, during part of its march from Samulcottah to Hydrabad. From the 17th until the 21st five cases occurred, and only two during the two following days. It suddenly became general on the 23d, and continued prevalent until the 30th. After the 30th it quickly declined; and, before the 6th of November, it had almost ceased. Of about 1150 men, 200 were attacked, and 73 died. The amount of the loss of camp followers, which was said to have been very great, could not be exactly ascertained. On the 21st of October, the corps was at Sheer Mahomedpett; on the 23d continued its march thence towards Mungall; and on the 6th of November, arrived at Mulkapoor. Previously to the appearance of Cholera the men were very healthy. When cases first occurred, the weather was cool and cloudy, the wind moderate, and it rained slightly every evening.

The 1st Battalion 1st Regiment N. I. suffered a pretty severe attack of Cholera in December, 1820, on the route from Nagpoor to Hydrabad. One case occurred at Hingolee; another at Nandair; and the disease suddenly became frequent on the 9th of December, while the corps was encamped near the small village Erkala, ten miles north of Mudnoor. The ground of encampment was confined, low, but dry, of the kind called "cotton soil," situated at the bottom of some rising grounds near the village, and in the neighbourhood of some stagnant water. The corps left this place the following day, and continued its march until the 21st, when, the disease continuing very prevalent, it was resolved to halt at Peddapoor, a village situated on high, sandy, ground, one march north of Ondole. Having remained here until the 25th without any diminution of the frequency, or severity of the disease, the corps again proceeded; and on the 30th arrived at Secundrabad. The disease began to decline on the 27th; and no case occurred after the arrival of the corps at the latter station. Of 1010 men, 167 were attacked, and 64 died. There was nothing remarkable in the state of the weather; very little rain fell; the nights and mornings were cold, and the heat of noon was by no means oppressive; heavy dews sometimes fell particularly at Peddapoor. The inhabitants of Erkala, where the corps was first attacked, knew nothing of the diease; nor was it known to have existed any where on the route from Nagpoor to Hydrabad, for many months previously. The villages were entirely free of it when the corps was in their neighbourhood; and it was not known to have subsequently appeared in any of them. For some-time before its commencement in the corps, the men, being unable to procure wholesome food, were constantly using new, unripe grain, called D'hall as the principal article of their diet. Slight Quotidian and Diarrhæa were the most frequent diseases previously to the appearance of Cholera; and after it had ceased, the former continued to be the most prevalent complaint. On the 13th of January, the corps left Secundrabad for Bellary; but no case of Cholera occurred during the march.

During the year 1820, numerous small detachments, both of European, and Native troops, were put in motion, several of which experienced attacks of Cholera, and these were pretty generally observed to occur in certain tracts of the great military roads, by which they were marching. Having mentioned the instances in which corps, on the march, suffered from Cholera during 1820, it will be no less interesting to observe, that under circumstances apparently similar, many regiments escaped entirely, or at least did not suffer more than others did, in quarters.

H. M. 53d Regiment performed the march from Trichinopoly to Bellary, where they arrived on the 25th of February 1820, having had but a few cases of Cholera, and by which one man only was lost. H. M. 34th Regiment marched from Bangalore to Madras, where they arrived in the end of June ; two or three cases of the disease occurred, but none ended fatally. H. M. 46th Regiment marched from Madras on the 1st of July, and arrived at Bellary on the 10th of August, by the route of Cuddapah, and Gooty. The corps continued generally healthy during the march ; but having experienced a violent storm on the night of the 15th July at Balpilly, a small village situated in a deep, and extensive jungle, six men were seized with Cholera next day, of whom two died : about five or six of the followers also suffered attacks of the disease, after which no farther cases occurred. The left wing of this Regiment marched afterwards to Belgaum, where it arrived on the 23d October ; and, the Flank Battalion of Europeans marched from that place to Bangalore, where it arrived on the 30th December without a case of Cholera happening in either instance. H. M. 53d Regiment marched again from Bellary on the 12th July, and arrived at Bangalore on the 1st of August ; one case of Cholera occurred, which proved fatal.

The 2d Regiment L. C. marched from Jalnah on the 15th of June along with the 1st Battalion 7th Regiment already noticed as having suffered considerably between that station and Hydrabad. This Regiment experienced but very little annoyance from Cholera, although under the same circumstances of exposure as the Battalion of Infantry ; and it prosecuted the remainder of the march, from Secundrabad to Kulladghee in the Dooab, without any case of the disease.

The 1st Battalion 21st Regiment N. I. marched from Secundrabad on the 12th August, and arrived at Samulcottah on the 21st September ; a very few insulated cases of Cholera occurred ; yet this corps traversed the same route as the 1st Battalion 22d Regiment, for the first 150 miles, and only ten days later. The 2d Battalion 9th Regiment N. I. marched from Belgaum on the 14th September, towards Sattarah ; thence retrograded, and pursued its march to Nundidroog, where it arrived on the 28th December, without having a case of Cholera ; nor was the disease observed in any of the villages on the route. The 2d Battalion 2d Regiment N. I. marched from Bangalore on the 16th September, and arrived at Darwar on the 23d October, pretty nearly in the same track, and had only one case of Cholera in a sepoy who died, and one in a camp follower, who recovered. The 1st Regiment Light Cavalry marched from Kulladghee by the route of Beejapoor, Pundapoor, and Perinda, on the 15th October, towards Jalnah, where it arrived on the 17th November, without having a single case of the disease. The 1st Battalion 10th Regiment Native Infantry marched from Sattarah to Bellary, during the months of November and December, also without having a case of it ; the 5th Regiment Light Cavalry likewise accomplished the march from Jalnah to Sholapoor during the month of November without a case of the disease. This closes the narrative for the year 1820.

Towards the end of February 1821, the 1st Battalion 8th Regiment N. I. commenced its march from Chittledroog to Nagpoor, and, on the 5th of April, arrived at Secundrabad. The corps had hitherto been healthy. On the 6th, while encamped here on low, sandy, ground near a tank, two cases of Cholera occurred. No one was attacked on the 7th ; but on the 8th, eleven cases presented themselves. The encampment was, this evening, removed to higher ground. The disease however, continued pretty frequent until the 14th, when the corps left Secundrabad. After the 16th only one case occurred. This station was at that time free from the disease. The weather was exceedingly hot, the Thermometer being during the day, about 115° in the double poled tents of the privates. After enjoying an entire immunity for three weeks, a few were again attacked during the last ten days of the march. The whole number attacked was 58, of which 31 died. The Corps reached Nagpoor on the 18th of May.

The 2d Battalion 1st Regiment N. I. commenced its march from Nagpoor to Trichinopoly, on the 6th of February 1821, and, on the 11th of March, arrived at Secundrabad. Fever had been pretty frequent during the early part of the march, but it had now abated very much ; and, the other diseases being trifling, and local, the Corps was considered healthy. While encamped at this place, in a small recess among low hills near a tank, where the 1st Battalion 8th Regiment abovementioned had also been encamped, the first case of Cholera appeared on the 19th of March; and it soon proved fatal. Another fatal case occurred on the following day. The corps proceeded on its march on the 21st, and on the 31st encamped within six miles of the north bank of the river Kistnah. During this interval, cases of Cholera occasionally occurred; and Diarrhœa, which had sometimes appeared previously, was pretty frequent. On the 1st of April the Battalion crossed the river, and encamped on sloping ground of a black soil near the village Khatoor. Immediately after crossing the river many of the followers were attacked with Cholera, and in a few hours it became frequent and violent in the corps. On the following day the camp was removed to Byeapoor, and pitched on high ground, of a clean, red soil. The cases were not quite so numerous, though equally severe, as in the preceding day. The corps crossed the river Toomboodra on the 3d, and encamped on high ground at Kurnool, where it remained until the 6th. On the latter day it proceeded slowly on its route, and on the 15th arrived at Gooty Anantapoor. Here it remained encamped on sandy, open, elevated ground until the cessation of the disease. From the 2d to the 8th the disease continued at its height; but from the 8th to the 15th it declined slowly, but progressively. On the 15th, it again became very frequent, though not quite so violent as formerly; and until the 25th, it continued to prevail without any considerable remission. After this period few severe cases occurred; but the disease did not altogether disappear until the 17th of May. Of about 940 men, 283 were attacked, and 87 died. Diarrhœa became frequent as Cholera declined, and continued so doing the greater part of May. The weather is said to have been generally good; the sky clear, the days hot, and the nights cool. On the nights of the 19th and 20th of April, there was a thunder storm, accompanied with gusts of wind from the north east, and a shower of rain; and on both days the number of attacks was greater than it had been for a considerable time preceding. Many of the inhabitants in the vicinity of the camp at Gooty were attacked by the disease. The corps left Gooty on the 19th of May, and continued free of the Cholera on the route to Trichinopoly.

The 1st Battalion 13th Regiment N. I. left Trichinopoly for Gooty, on the 5th of February, and arrived at the latter place, on the 13th May; a few cases of Cholera appeared during February, which were mild; but in the neighbourhood of Salem it assumed a more formidable shape, and prevailed during the greater part of March; in April only one case occurred, which was the last on the march. There were 58 admissions in all, and of these, eight died.

The 1st Battalion 5th Regiment N. I. left Bangalore in March, 1821, and continued remarkably healthy on its route to Malligaum in Candeish, until it arrived at Rajoory, between Punderpoor, and Ahmednuggur. While encamped at that place, on the 14th of May, Cholera suddenly commenced in a violent degree; and it continued frequent until the 21st. After this period its violence and frequency were much diminished; but it did not disappear, until early in June, a few days after the arrival of the corps at Malligaum. Of 95 attacked 47 died. Soon after the arrival of this corps, sixteen men of a corps at the station experienced an attack of Cholera.

About the middle of March, 1821, the 1st Battalion 15th Regiment N. I. left Quilon for Hydrabad, its route being by Coimbatoor, Bangalore and Gooty. It continued healthy on its way through Mysore. On the 21st of May, when encamped near Koodore, a little beyond the northern boundary of Mysore, Cholera suddenly became very frequent. Four cases had previously occurred at long intervals. It began to decline on the 27th, and after the 4th of June, only four cases appeared. Of about 1090 men 193 were attacked and 73 died. For some time previous to the 21st of May, the days were very hot, and the nights cold and damp; the Thermometer during the former period being at 98° or 100°, and during the latter, from 74° to 76°. The corps had continued to make short marches until the 30th, when it reached Hundee Anantapoor. At this place the sick were comfortably accommodated, and recovered rapidly. No case of Cholera occurred on the route hence to Hydrabad. Diarrhæa, and Quotidian were the most frequent diseases for some time before the commencement of the attack of Cholera, and Dysentery was unusually frequent for some time after its cessation. Very soon after the passage of the corps, Cholera appeared in almost every village on that part of the route, which the corps had travelled while suffering from that disease. In some villages it was very prevalent and destructive. It had not previously existed in any of these villages; nor did it subsequently extend to other parts of the district.

The 1st Battalion 12th Regiment N. I. marched from Jalnah on the 16th March, for Wallajahbad, where it arrived on the 29th May. The route was by Hydrabad, Rachore, Gooty, Cuddapah, and Naggery This corps experienced no attack of Cholera until after it had passed Gooty, early in May, when the disease appeared, and affected 65 men, of whom 21 died; it had nearly disappeared when the corps entered Wallajahbad, and only two or three cases occurred after that.

The 2d Battalion 16th Regiment N. I. experienced a pretty severe attack of Cholera on its route from Gooty to Secundrabad. The disease began to appear among the men on the 27th April, three days after they had left Gooty, and continued until the 21st May, within three days march of Secundrabad. Of 122 attacked 34 died. This was the third time that Cholera had prevailed in the corps.

Early in April, 1821, the 1st Battalion 4th Regiment N. I. left Berhampore, near Ganjam, on its route to Nagpoor, by Hydrabad; during April, and May, a case of Cholera occasionally occurred; but the disease did not become frequent until the 2d of June, when the corps was encamped on dry, elevated, ground, at Juggapet near Mungall. It continued to increase until the 8th, and began to decline on the 10th. After the 15th, on which day the corps arrived at Opal, it was of rare occurrence; and about the 24th it altogether ceased. During its prevalence, the corps was marching through a sterile, parched, country, the greater part of it jungly: and the weather was exceedingly hot, the Thermometer during the day being from 107° to 113° in the coolest tents of the Officers; and in the night seldom sinking under 97°. From the 4th to the 13th provisions were very scarce, and to be procured only after much search under the influence of a burning sun. Some rain fell on the 9th, and 11th, which cooled the air considerably; after the 13th, when the corps arrived at Mulkapoor, the sick were well accommodated, and the provisions were more abundant. Of about 1000 men 170 were attacked, and 57 died. The corps left Hydrabad on the 2d of July; and, notwithstanding the disadvantage of travelling during the rainy season, it continued healthy all the way to Nagpoor.

The 6th Regiment of Native Cavalry commenced its march from Nagpoor to Arcot, on the 13th of May, in a healthy state. On the 19th at Koomlie, two men were attacked by Cholera; and from this time until the arrival of the Corps at Arcot, about the end of July, the disease, though not at any time very frequent, occasionally occurred. It was most frequent the week before the Regiment had reached Hydrabad, and the week following. From Nellore to Arcot, it was less frequent than at any former period of the march. No cases in general appeared on the halting days; nor was any one attacked during four days occupied in swimming the Kistnah. Of 122 attacked, 29 died. The weather in May was exceedingly hot and dry: near the Kistnah, about the end of June, it was cooler and rainy. The disease was not known to exist any where on the route.

On the 17th of May, the 1st Battalion 11th Regiment N. I. proceeded from Nagpoor on its route to Ellore, by Hydrabad. Cholera appeared in camp at Barodah on the 24th; became prevalent on the 28th; and began to decline on the 3d of June. After the 6th, the disease was rare; but cases appeared at considerable intervals during the remainder of the march. Of 138 attacked, 55 died. It was reported by the inhabitants of Idulabad, a town which the corps passed on the 30th of May, that the disease had lately been prevalent there, but had then almost disappeared. The symptoms were most violent during the first four days, when the cases were not very frequent.

On the 21st of May, the 1st Battalion 3d Regiment N. I. left Nagpoor for Wallajahbad, by Hydrabad and Nellore. On the 31st, Cholera appeared in the camp at Kyer, and continued pretty frequent during June. Cases occasionally occurred till the 27th of July, the corps being at that time, three or four days march south of the river Kistnah. Of 143 attacked, 32 died. The reports contain no observations on the state of the weather, or the features of the disease.

The 2d Extra Battalion marched from Trichinopoly on the 2d June, by Madura and Palamcottah for Quilon, where it arrived on the 11th July; towards the conclusion of the march, and after entering the confines of Travancore, about 17 cases of Cholera occurred, of which 6 proved fatal.

The 2d Battalion 24th Regiment N. I. marched from Wallajahbad on the 5th June, by the way of Chittoor, Punganore, and Palsamoodrum, and reached Bellary on the 13th of July. The weather was stated to have been "delightful." Cholera however made its appearance about the commencement of the march, and continued at intervals till its conclusion; 62 cases occurred, of which 22 terminated fatally.

The 1st Battalion 2d Regiment N. I. marched from Malligaum, in Candeish, early in June, by the route of Poonah, Sattarah, Beejapoor and Bellary, for Bangalore, where it arrived on the 17th October; the greater part of this long march was prosecuted during the south-west Monsoon; 74 cases of Cholera occurred, of which 35 proved fatal. The reports are not complete for the early part of the march, and it is not known under what circumstances the disease first appeared; but of the numbers mentioned above, 20 cases occurred, of which 13 were fatal, between Punderpoor and Beejapoor, in which track the disease was raging at the time.

The 1st Battalion 16th Regiment N. I. left Trichinopoly in December, by the route of Palamcottah, and Madura, for Quilon, where it arrived on the 22d January 1822. About the confines of the Travancore country, Cholera appeared in the camp; 17 men were taken ill, of whom 6 died. Nearly at the same time, and on the same route, a large detachment of Natives from Quilon to Trichinopoly had no case of the disease until they approached Palamcottah.

While corps under movement, at whatever season of the year, and in whatever tract of Country, would thus seem obnoxious to severe visitations of Cholera, many instances can be adduced of their enjoying an immunity from the disease, under circumstances, to all appearance, similar.

The 2d Battalion 20th Regiment N. I. marched from Hydrabad on the 3d January 1821, by the route of Neermull, and arrived at Nagpoor on the 2d February, without having a single case of Cholera. The 5th Extra Battalion moved from Bangalore to Ryacottah in January; and the 2d Battalion 14th Regiment N. I. from Vellore to Chittledroog in the course of January and February, with an equal exemption; and the 8th Regiment Light Cavalry marched from Sholapoor to Arcot, where it arrived in February, also without any case of the disease. The 2d Battalion 12th Regiment N. I. marched from Bellary on the 29th January, by Adonie and Koolburga, for Jalnah, where it arrived on the 14th March, and no case of Cholera occurred.

The 1st Battalion 24th Regiment N. I. moved from Ellore on the 4th February, by Vizianagram and Chicacole, and reached Berhampore on the 16th

March, also without a case of the disease. The Medical Officer reported, that it had not been known in the villages in this route for two years before The 3d Regiment Light Cavalry marched from Arcot on the 12th February, for Nagpoor by the route of Cuddapah, Gooty, Hydrabad, and Neermull. Some cases of Cholera took place among the camp followers, of whom five died ; but no man of the regiment suffered. The 2d Battalion 25th Regiment moved from Palamcottah on the 25th February, by the route of Oodagherry and Trivanderum for Quilon, where it arrived on the 13th March ; 8 men of this corps were seized with the disease, and two of them died.

The 2d Battalion 13th Regiment N. I. marched from Hydrabad on the 13th May, by Ongole, Nellore, and Poonamallee, and arrived at Trichinopoly on the 7th August. Cholera existed in the corps before the commencement of the march, though in a slight degree ; two mild cases occurred in the course of the first week, but no other was observed during the remainder of the march. The 2d Battalion 6th Regiment N. I. left Hydrabad on the 7th August, for Vellore, by nearly the same route of Ongole and Nellore, and reached their destination without having a case of the disease. The 2d Battalion 15th Regiment N. I. accomplished the march from Malligaum in Candeish, to Masulipatam, without experiencing a case of Cholera ; the Corps marched on the 13th December 1821, by the route of Jalnah, and Secunderabad, and arrived on the 20th February 1822.

Of the numerous detachments moving in the course of the year 1821, many entirely escaped Cholera ; while most of those marching in particular tracks suffered from it ; these tracks were between Nellore, or rather Ongole and Hydrabad ; the Cuddapah road towards Bellary and Hydrabad ; the route to the northward of Trichinopoly, and between that town and Quilon.

Although many corps of Native Troops have been under movement during the year 1822, they have enjoyed an almost entire exemption from Cholera. The European corps have not been equally fortunate, with two exceptions : first of the Madras European Regiment, which marched from Nagpoor on the 17th January, and arrived at Masulipatam on the 16th of March. At that season of the year, the viscissitudes from cold at night, to heat in the day time, were necessarily sudden, and considerable ; the route pursued by Chandah, Chinnoor, and Ellore, lay through some very extensive tracks of Jungles ; yet notwithstanding these circumstances, only two slight cases of Cholera occurred : secondly, of the 2d troop of Horse Artillery, which effected the march from Nagpoor to Secundrabad, in January and February without a case of Cholera ; and again, that to the Mount in September, October, and November, and experiencing almost continued rains and sultry weather, with only one case of Cholera in a soldier, and two or three cases among the followers.

This portion of the narrative has been hitherto confined to the notice of marching corps : it is now necessary to advert to some very fatal visitations of Cholera which took place at, and near Madras, in the months of May, June, and July, in four of His Majesty's regiments : some of these regiments were not indeed actually on the march, but they were placed in circumstances differing very little from the fatigue and exposure of a camp life.

H. M. 54th Regiment landed at Madras on the 10th of May from the H. C. Ships William Fairlie, and Thomas Coutts, in a remarkably healthy state, after a voyage of 48 days from the Cape of Good Hope, and marched into quarters in Fort St George. Cholera appeared amongst the men within three days after their landing ; and it continued till the 7th of June, three days after their moving into camp, on their route to Bangalore. It re-appeared on the 13th June, but in a greatly mitigated degree, and did not finally cease till the 1st of July, two days after the regiment marched into quarters at Bangalore ; on the 26th of June four cases occurred, but there were no more until the 30th, when there was one case, which proved to be the last. Of 632 men, 159 were seized with Cholera, of whom 54 died. The European women and children of the regiment suffered considerably, while very few of the native camp followers were attacked by the disease.

H. M. 34th Regiment moved out of Fort St. George on the 10th of May, into camp at the Mount, where they remained stationary till the 25th; on that day the corps commenced its march to Wallajahbad, which it completed in three days, and went into quarters there on the 27th. Cholera appeared in the camp on the 14th, and prevailed with great severity till the 25th; on that day, being the first of their movement, 9 cases occurred, all very tractable; it then ceased, but on the 1st and 2d of June, and on the 19th and 20th of that month, several fresh cases took place; of 836 men, 87 were seized with the disease, of whom 18 died. The regiment was volunteering during greater part of the time they lay at the Mount, an occasion which invariably gives rise to excessive drinking; and consequently, to great exposure to the climate, whether during the day, or night; but the disease had distinctly broken out before the volunteering began. It will likewise be presently seen, that another regiment got through their volunteering, and in a standing camp likewise, without any appearance of Cholera. The women and children of the 34th Regiment suffered considerably; but it does not appear that many of the native camp followers were attacked.

His Majesty's 53d Regiment marched form Bangalore towards Madras, on the 11th of May, by the route of Chittoor. The corps was in a remarkably healthy state, neither leaving a man behind, nor having a man in sick carriage. They reached Palamanair at the top of the Ghauts on the 20th of May without accident; but during that, and the succeeding day, two cases of Cholera occurred. On the 22d they descended the Ghauts, and the disease gradually increased; the admissions were most numerous from the 27th to the 31st of May, and the disease had ceased by the 5th of June, on which day the regiment marched into Fort St. George. Of 871 men, 70 were attacked with Cholera, of whom 20 died. The native camp followers suffered comparatively little. This regiment having afterwards moved into camp near Madras, about the middle of July, for the purpose of volunteering into other corps, they, contrary to the experience of the 34th Regiment, entirely escaped Cholera on that occasion.

His Majesty's 41st Regiment arrived in two divisions from England, on the 6th and 15th of July, and marched into Fort St. George. The men of the 1st division were almost immediately attacked with Cholera; those of the 2d division having landed during its prevalence, several of them were taken ill in the course of the morning of their landing. Of 714 men, 159 suffered an attack of the disease, of whom 32 died. The disease had almost entirely ceased by the end of the month.

It has been stated that the 54th Regiment landed from the ships William Fairlie, and Thomas Coutts, on the 10th of May. In the former ship, while at anchor in the roads, Cholera made its appearance, on, or about, the 18th of May; they had 65 cases, and of these 12 proved fatal. The disease did not appear in the Coutts till a fortnight afterwards; they had only 23 cases, of which 6 were fatal. Several circumstances connected with the appearance of the disease on board these ships deserve to be noticed. No case of Cholera occurred in either ship, while out at sea. The Fairlie lay at anchor so far to the southward, as to be directly to *leeward* of the Fort, and this was during the prevalence of the strong south west winds; the disease was at that period established in the 54th Regiment in garrison there. The men who worked upon deck, and those who slept on the *landward* side of the ship, were found to be decidedly the most obnoxious to attacks of Cholera. The ship afterwards took up a position farther north, and about a quarter of a mile directly to windward of the Coutts; although Cholera had then existed in the former ship for nearly a fortnight, one solitary case only had as yet appeared on board the latter ship; this case was in a sailor who slept on deck in a state of intoxication, during the night. Thus situated, the wind blew directly over the Fairlie to the Coutts, and the disease at this juncture appeared in the Coutts; all the men attacked, with one exception, slept on the side of the ship next to the Fairlie; this side however was likewise the *landward* side. Four men in one mess on board the Fairlie died of Cholera, the one having been successively nurse to the other.

The comparative liability to Cholera, and the comparative mortality under its influence, between old, and newly arrived regiments, as exhibited in the instances abovementioned, may be thus stated. The 34th Regiment had 10½ per cent of their effective strength taken ill, and the 53d Regiment had not quite 9 per cent.; the 54th Regiment had 23½ per cent of their effective strength taken ill, and the 41st Regiment a little more than 22 per cent. The 34th Regiment lost every 5th man taken ill, and the 53d lost about every 3½. The 54th Regiment lost every 3d man taken ill, and the 41st Regiment lost every 5th. The four regiments however, were not placed in parallel circumstances; for the 34th and 53d regiments were under canvass, and one of them was actually marching; while the 41st and 54th Regiments were in quarters; the former during the whole period, and the latter during the greater part of it. Whatever difference there may be with respect to the liability to Cholera, while a corps is marching, or while it is at rest, it is obvious atleast, that a patient labouring under the disease, must enjoy many advantages in a fixed hospital, which he could not have in a camp; and that the fatigue of a march, with its attendant interruption of curative means, must be taken into account.

During these months of May, June and July, while Cholera prevailed to so great an extent in the four regiments, and on shipboard, if not altogether unknown amongst the other European, and the Native troops at the Presidency, St. Thomas's Mount, and Poonamallee, and amongst the European, and Native population of these places, it was, at least, of as rare occurrence, as at any former period since its first invasion. As the season of 1822 was generally considered to have been one of unusual heat at Madras, and to have been distinguished by an uncommon prevalence of hazy weather, and south west winds, this may be the most proper place for some observations on the subject.

In May 1822 there were 16 days with a clear sky; 9 alternately clear and cloudy; and 6 days, cloudy and hazy. The mean height of the Barometer in May, was 29,90 and that of the Thermometer was 92°25; the extreme height of the Thermometer was 101°; and its least height 83° 5; rain fell in showers on the 25th and 26th; and again on the 30th. The wind was westerly and varying from N. W. to S. W. 14 days. The first twelve days of the month were clear, with S. E. wind; the 13th day was clear and hazy, with calms, and S. E wind; the 14th was hazy, the wind W. S. W.; hazy weather prevailed from that time till the 20th, when the sky became clear; and continued generally clear, till the 30th. The greatest heats occurred after the 19th; on that day the Thermometer stood at 99°, and on the 24th at 101°. The Moon was most distant from the Earth on the 6th, and nearest to it on the 20th; full Moon took place on the 6th, and new Moon on the 21st.

The mean number of clear days in the month of May, from 1815 to 19, was 21; and clear and hazy days 4, making 25 during the month, as in 1822. In 1820, May presented 14 clear, and 8 clear and hazy days, making 22; and in 1821, 15 clear, and 9 clear and hazy days, making 24. In this respect accordingly, there was nothing unusual in May 1822.

The mean height of the Barometer in May, from 1815 to 19, was 29,88; in 1820, 29,38, in which month, a great storm took place; in 1821, it was 29,90. The mean height of the Thermometer in May, from 1815 to 19, was 90°, 55; in 1820, it was 86° 1; and in in 1821, 89,5. The mean greatest heat from 1815 to 19 was 101° 4 ; in 1820, the greatest heat was 98° 2, and in 1821, it was 96° 5. In respect to the Barometrical phenomena, therefore, the month of May 1822 was not distinguished by any material deviation from former years ; but in respect to the Thermometrical phenomena, the mean height was 1° 7 above that of the five years from 1815, to 19; 6° 24 above that of 1820 ; and 3° 20 above that of 1821. The extreme height in May 1822, viz. 101° was however nothing very uncommon ; in 1815 it was 104° 50 ; in 1816, 100° 70° ; in 1817 98° 50 ; in 1818, 103° 80 ; in 1819, 97° 70 ; in 1820, 98° 2 ; and in 1821, 96° 5.

During the last eight years, the quantity of rain which has fallen at Madras in May, has been too inconsiderable to be measured by the rain gauge, excepting in 1816, when 2-10ths of an inch fell ; and in 1820 on occasion of the storm.

With respect to the winds which prevail in May, they blow chiefly from the S. E. ; when blowing from the land, it does not appear distinctly from the Meterological Tables, until 1820, whether the quarter was due west, or to the southward of west, but as these winds form what is called the south west Monsoon, it is fair to conclude that their direction is not different now from what it was in former years. In May 1815 there were 21 days with westerly, or " land" wind ; in 1816, there were 15 days ; in 1817 however, there does not appear to have been one day of westerly wind ; in 1818 there were also none ; in 1819 there were only 3 days of westerly wind ; in 1820 there were 15 days of westerly, and south west wind ; in 1821, only 4 days ; and in 1822, 14 days, which are noted in the tables as S. W. A remarkable deviation would seem therefore to have taken place in respect to the winds in the month of May at Madras, in the years 1817 and 1818, which were the first years of the Epidemic, in India, although it did not reach Madras till October of the latter year. In 1819 a partial re-establishment of the usual westerly wind took place ; in 1820 there was a nearer approach towards it ; but in 1821 a repetition of the former irregularity ; in 1822, however, the usual, or nearly the usual number of days with westerly winds was observed. The month of May has been thus particularly noticed, as during its course the most formidable attacks of Cholera yet experienced on this Establishment, took place in three European Regiments, and in two of the Company's ships noticed above ; while the other troops, and the surrounding inhabitants entirely escaped. As June, and July were likewise distinguished by the prevalence of Cholera amongst the newly arrived troops, a short retrospect shall be given of the Meteorological phenomena of these months also.

At Madras, the weather in June is usually cloudy, with occasional showers, and it is cooler than in May. In 1822, June presented only 4 days of clear sky ; 4 of clear and hazy ; and 22 of cloudy and hazy. The mean height of the Barometer was 29,86 ; and that of the Thermometer 87° 9 ; the wind blew from the westward 22 days ; 1,525 inch of rain fell. The mean number of clear days in June, from 1815 to 19 was 5 ; of clear and hazy also 5 ; and of cloudy and hazy 23 ; in June 1820, there were 4 clear ; 5 clear and hazy ; and 21 cloudy and hazy days ; but in 1821, in June, there were 19 clear ; 3 clear and hazy ; and only 8 cloudy and hazy days. The mean height of the Barometer in June, for 5 years from 1815 to 19, was 29,86 ; in 1820, it was 29,70 ; and in 1821, 29,93. The mean height of the Thermometer in June, for the same periods was 89° 19, 83° 3, and 91° 6. In respect therefore of the Barometrical and Thermometrical phenomena, the month of June 1822 was remarkably regular. The mean quantity of rain which was measured by gauge in the months of June from 1815 to 19, was 0,24 ; in 1820, it was 0,85 ; in 1821, 1,1 ; and in 1822, 1,525. The quantity of rain therefore seems to have been greater this year than usual, as it also was in the two preceding years. The mean number of days of westerly wind in June for five years, was 14 ; but in June of the year 1817 there were only 7 days of west wind, which makes the mean too low ; in June 1820 and 21, there were 26, and 22 days, of westerly wind which agrees nearly with the same month in 1822.

The weather in July at Madras, is pretty similar to that of June, and in the year 1822, it presented nothing very unusual. The number of clear days was 10; of clear and hazy 1; of cloudy and hazy 20. The mean height of the Barometer was 29,90 and that of the Thermometer 85° 75. The wind blew from the westward 19 days; 0,55 rain fell. The mean number of clear days in July, from 1815 to 19 was 4; of clear and hazy 3, and of cloudy and hazy 23. In July 1820 there were two clear days; 5 clear and hazy, and 24 cloudy and hazy; in 1821, July presented 1 clear day; 10 clear and hazy, and 20 cloudy and hazy. The mean height of the Barometer in July from 1815 to 19, was 29,85, in 1820 it was 29,95, and in 1821, 29,92. The mean height of the Thermometer for the same periods was 86° 36, 87° 4, 88°, 85° 75. The mean number of days in which the wind blew from the westward in July, from 1815 to 19, was 15; in 1820 it was 22; in 1821 it was 18.—In these respects therefore the month of July 1822 was remarkably regular. In regard to the fall of rain in July however, considerable irregularity seems to have prevailed; the mean of five years from 1815 to 19 in the month of July was 5,73—but the fall in July 1818 was 12,75 exceeding all former examples almost; the average of 4 years, *excluding* 1818, gives 3,22; in 1820 the fall of rain in July was 3,525; in 1821 it was 1,20; and in 1822, only 0.55 as above stated.

The mean heights of the Barometer and Thermometer during the three hot months, May, June, and July from 1815 to 1822 were as follows.

1815	Barometer	29,82	Thermometer	87°
1816	„	29,84	„	88°
1817	„	29,91	„	88°
1818	„	29,87	„	88°
1819	„	29,86	„	89°
1820	„	29,74	„	87°
1821	„	29,92	„	89°
1822	„	29,89	„	88°

Were they to judge by their bodily feelings, most persons who resided at Madras during May 1822 would be disposed to affirm, that the heat in that month was intense; the atmosphere oppressive and lowering in an unusual degree; the sky gloomy; and the winds most distressing and enervating, combining much of the relaxing property of what are termed "long shore winds," with the heat of the "land winds." It is certain, that the salubrity of an atmosphere cannot be determined by philosophical instruments, any more than by our feelings; and that even our perceptions of its sensible properties are considerably influenced by the imagination; but this seems the proper place to admit, that the weather at the Presidency, during the period in question was not, to our sensations, that which it was indicated by instruments and meteorological records to be, viz. a season in most respects regular. The Epidemic has arisen, and has prevailed during every state of the weather; its appearances at stations, and in corps, during cool, and during hot weather, are very nearly equal in point of number; but they have been doubly more frequent in *dry*, than in *wet* weather.

A very considerable number of small parties of European troops have been put in motion from one station to another during the year 1822: these, although generally escaping any formidable attacks of Cholera, have nevertheless exhibited a greater proportional number of sporadic cases of the disease, than parties of Native troops who have been marching nearly by the same routes, and at the same seasons of the year. Some of these European detachments have suffered pretty severely. In one which proceeded from Poonamallee to Trichinopoly in January, the disease appeared at Olundurpett; they had 11 cases, of which 7 terminated fatally: another proceeding from Poonamallee to Secunderabad, had 24 cases, of which 5 terminated unfavourably; this detachment moved from Poonamallee on the 11th April, and on the following day, passed through the camp of a detachment of Artillery in which Cholera had prevailed for some time; on the 14th the disease appeared, but it continued for two or three days only. In the Artillery detachment on the contrary, which had come from Nagpoor, it had hung about them ever since they left the Kistnah, occasionally attacking both Europeans and Natives; the disease was not known in the villages on the route, nor in the 1st Battalion 9th Regiment N. I. which was marching the same way, and frequently coming in contact with the Artillery.

It has already been observed that the Native troops, which have been under movement in the course of this year, have enjoyed an almost total exemption from Cholera. The instances shall now be briefly noticed, in order to complete this narrative.

The 3d Regiment Light Cavalry, the 1st Battalion 4th Regiment N. I. and the 2d Battalion 20th Regiment N. I moved from Nagpoor about the middle of January, and arrived at Secundrabad towards the end of February, the Cavalry by the route of Bassim and Nandair, the Infantry by Neermull, and continued free from Cholera. The 1st Battalion 6th Regiment marched at the same period from Nagpoor and arrived at Bangalore on the 6th April, having travelled by Neermull, Hydrabad and Gooty, and it likewise escaped Cholera; during its passage through the Ceded Districts, remittent fever was rather prevalent. The 2d Battalion 23d Regiment N I. left Nagpoor on the same day with the 6th Regiment, and travelling by the same route, reached Bellary on the 19th March, and continued healthy during the march.

The 1st Battalion 8th Regiment N. I. left Nagpoor on the 15th January for Jalnah, where it arrived on the 11th February, having suffered no sickness on the march. The 1st Battalion 19th Regiment N. I. marched from Chandah, in the Nagpoor territory on the 20th January, by the route of Chinnore, and Ellore, and reached Chicacole on the 24th March. The 2d Battalion 5th Regiment N. I. left Jalnah on the 13th February, and arrived at Cuddapah on the 7th of April, by the route of Beder, Moorindab on the Kistnah, and Nundiall. Intermittent fever became frequent while the corps was marching through an extensive jungle; but no case of Cholera occurred. The 1st Battalion 9th Regiment N. I. marched from Secundrabad on the 25th February, by the route of Ongole and Nellore, and though frequently coming in contact with the Artillery detachment from Nagpoor, in which camp, Cholera was present, the Battalion entirely escaped the disease; it arrived at the new cantonment of Palaveram, near the Mount, on the 13th April. The 1st Battalion 22d Regiment N. I. marched for the same destination on the 26th February, from Masulipatam, and arrived on the 10th of April; the corps was remarkably healthy, but one case of Cholera occurred, ending fatally. These two corps may be considered to have remained under circumstances almost entirely similar to a standing camp, during the succeeding hot months of May, June, July, and August, but Cholera did not arise amongst them.

The 1st Battalion 17th Regiment N. I. moved during the month of March from Secundrabad to Masulipatam, without experiencing a case of Cholera. The 2d Battalion 4th Regiment N. I. moved from Darwar on the 21st April, and marching by Hurryghur, and Ossoor reached Ryacottah on the 24th of May; no case of Cholera occurred during the march, but shortly after the arrival of the corps at its destination, a few men were seized with it. The 2d Battalion Pioneers moved from Neemla Ghaut early in March, by the route of Darwar, Chittledroog and Nundidroog to Naickenary at the top of the Pedunaigdroog pass, where they arrived on the 5th of May, without having experienced any case of Cholera. The 7th Regiment L. C. marched from Arcot on the 2d September and arrived at Trichinopoly on the 19th; one case of Cholera occurred towards the end of the march, which proved fatal.

The detachments of Native troops which were put in motion during the year 1822 experienced as little inconvenience from Cholera as the corps which have been noticed. It may be proper to observe however, that with exception of the 2d Battalion 4th Regiment, no native corps was actually marching during the months of May, June, and July, when Cholera was so fatally prevalent in the four European regiments; but the two Native battalions at Palaveram in the immediate vicinity of Madras were, during that period, as already noticed, certainly exposed to most of the inconveniencies of a standing camp, and it was in standing camps, and in quarters, that three of the four regiments, suffered the visitations described.

Epidemic Cholera having now existed in these territories for about five years, and, as the preceding narrative evinces, having proved a formidable scourge to all conditions of people, it will be satisfactory here to exhibit that the extent of its ravages in the Army, falls short of what might be apprehended from a cursory perusal of its history. The following tabular view is taken from the returns in the appendix, and it will not pass unobserved, that prior to the appearance of the Epidemic, cases of Cholera were progressively becoming more frequent.

Tabular view of the number of cases of Cholera occuring in the Army of Fort St. George from 1815 *to* 1822.

Years.	Europeans.		Natives.		Strength.		Remarks.
	Admitted.	Dead.	Admitted.	Dead.	Europeans.	Natives.	
1815	65	,,	87	,,	13,409	59,672	
1816	97	,,	92	,,	13,943	61,969	
1817	168	,,	114	,,	12,959	61,641	
1818	1087	232	3,314	664	10,652	58,764	
1819	564	85	3,779	734	10,125	63,782	
1820	356	69	3,322	758	9,416	76,870	
1821	357	39	2,527	830	9,553	82,046	
1822	774	170	548	199	10,813	74,707	
From 1818 to 1822	3138	595	13,490	3,185			
add	526	100	2,340	550			Not in the regular Returns.
Total....	3664	695	15,830	3,735			

The General Returns for 1815, to 1817, do not exhibit the diseases from which casualties arose, and it is not known, accordingly, whether any, or how many of the cases of Cholera during these years, terminated in death: but in the course of the first four months of 1818, when 17 cases of Cholera took place amongst Europeans, no death ensued; in May 14 cases occurred, and 9 died. Amongst the Natives, during January and February, 10 cases took place, without a casualty: in March 12 cases and 2 deaths; in April 37 cases and 13 deaths; in May 72 cases, and 24 deaths. We may therefore conclude that the Epidemic Cholera furnished the first casualties amongst Europeans in May; and amongst the Natives in March 1818; and that prior to that period, the casualties from Cholera, commonly called Cholera Morbus did not exceed the usual proportions.

From 1818 to 1822 inclusive, the Medical Returns show 3138 cases of Cholera in Europeans, of which 595 terminated fatally; being in proportion of about 19 per centum; and 13,490 cases in Natives, of which 3185 terminated fatally, being about 23½ per centum. As, however, the Medical Returns of small detachments of Europeans are not always included in the General Returns; and as there are no Returns at all from some of these detachments, 526 cases, and their proportional 100 casualties are allowed, to meet the aggregate of such incidents, which then gives 3664 cases, and 695 deaths. The Medical Returns of various Native troops being missing for certain months, recourse was had to the regimental records, from which it appears, that very nearly 550 men have died of Cholera without appearing in the tables in the appendix; which number at 23½ per centum gives 2340 cases; with these additions the total number of cases in the Natives of the Army, may be stated at 15,830 and the casualties at 3,735. This loss will probably fall much within the calculations of those who have been accustomed to hear of the ravages committed by the disease.

Great as the proportionate mortality which has just been stated, may appear to be, it is nevertheless probably far within the truth. When the disease first appeared, there were many causes tending to magnify the number of attacks, and the number of cures; and a most erroneous estimate was too generally formed, of the relations in which these events actually stood to each other; the regimental Practitioner was accordingly astonished and dismayed at finding, when the disease attacked his corps, and each case was authenticated under his own observation, that the proportion of deaths was most widely different, and greatly exceeded his calculations.

It is probable that since Cholera has been prevalent, many cases have been ranked under that head in the Returns, which at other times, and under a more careful diagnosis, would have found their places in other columns. The "Cholera Morbus," too, has been necessarily blended in the tables, with the "Epidemic Cholera," for notwithstanding every precaution, it was found, that these forms of disease could not be accurately distinguished in most of the Returns; whether, under this uncertainty, that form of the disease has increased in latter years in the ratio of increase exhibited in 1816 and 1817, or not, it is difficult to judge; but there have at least occurred on several occasions, a kind of Cholera, very frequent in its attacks, and in all respects answering the definition of Cullen.

To ascertain therefore the true proportional mortality of the prevaling Epidemic Cholera, recourse may be had to those formidable visitations in particular corps, which form part of the subject of the preceding narrative; and the result of this enquiry gives 767 cases, and 211 deaths amongst the European troops; and 4065 cases, with 1544 deaths amongst the Natives. We have thus the proportion of 27½ per centum in the former, and nearly 38 in the latter, which, considering that this disease runs its fatal course, very generally, within twelve hours, sufficiently marks it as one of the most formidable that has ever afflicted the human race.

FORT ST. GEORGE,
31st December 1822.

EXTRACTS
FROM
ORIGINAL REPORTS
OF
MEDICAL OFFICERS
ON THE
EPIDEMIC CHOLERA,
ADDRESSED TO THE
MEDICAL BOARD.

Asst. Surg. J. Haines, Aska, 13th March 1819.

I BEG leave to state, that the Epidemic first made its appearance in this neighbourhood on or about the 23d of April 1818; it continued until the 16th of May, when it suddenly disappeared, and we had not one case of it in all June, but it returned with encreased violence during the whole of July, proving fatal to many sepoys of the Battalion, and carrying off nearly half the population in some of the adjacent villages: after this it became less frequent, but continued returning at periods until December; since which time there has not been the slightest appearance of the complaint, either in the Battalion, or in the immediate vicinity of this place.

The following Table will shew the number of men of the 1st Battalion 4th Native Regiment that were attacked, recovered, or died of Spasmodic Cholera during its prevalence.

	Admitted.	Recovered.	Dead.	Remarks.
April..........	5	4	1	
May..........	7	4	3	
June..........	0	0	0	
July..........	24	13	11	
August..........	2	1	1	
September..........	0	0	0	From June 20th to 4th of August I was absent from the Battalion,
October..........	5	1	4	
November..........	3	1	2	
December..........	2	1	1	
January..........	0	0	0	
February..........	0	0	0	
March..........	0	0	0	
Total	48	25	23	

The symptoms, as they generally appeared here, were, a vomiting and purging of watery matter, prostration of strength, urgent thirst, deafness, spasms, particularly over the hands and lower extremities, a burning sensation and oppression over the præcordia, extreme dejection of countenance, languid circulation, a cold skin, eyes sunk within their orbits, and in some instances the lumbricus teres was ejected, and passed downwards, in considerable numbers: but I have seen men fall victims to this complaint, without spasms or indeed any of

Asst. Surg. J. Haines, Aska, 13th March 1819.

the abovementioned symptoms whatever, save prostration of strength, and that peculiar appearance of the countenance which cannot be well mistaken.

Of the treatment of this complaint, although so wide a field offers, I am by no means prepared to give a decided opinion, as to the beneficial effects of any remedy that came under my observation. The treatment I usually had recourse to, on a patient's being admitted, particularly when vomiting occurred, was in the first instance if possible, to allay the irritation of the stomach by a draught, composed of laudanum and camphor, administering the tinct opii from 60 drops to ʒii as the urgency of the symptoms might appear to require, and this plan I generally found allayed the vomiting; if not, the draught repeated, seldom failed; calomel from 15 to 20 grains was then given, and the patient put into a bath as hot as he could well bear, after which, friction was applied unremittingly to the trunk and extremities, with fires placed under his cot, frequent emollient and aperient enemas, blisters over the epigastrium; also large quantities of ardent spirit, sometimes exceeding three quarts, have been given in a few hours, with the intention of supporting the vis vitœ, until medicines could be brought to produce some effect on the gall bladder by stimulating it to action; whenever this happened and the patient passed bile, however much exhausted previously, I observed they almost invariably recovered: but the determined constipation which so very generally occurred here, nearly amounting to paralysis of the bowels, defeated every attempt to open a passage, either by drastic or mild purges, of whatever quality, or however large the quantity given.

I am by no means disposed to believe the Epidemic, as it appeared at this place, to be either contagious or infectious, for were it so, the probability is, that some of the hospital servants would have suffered from contagious influence; whereas not any one of them, or the supernumerary attendants were affected although employed rubbing, and consequently hanging over the diseased person for hours together.

Of bleeding in this complaint I can say nothing, never having seen a case that appeared to justify even the attempt.

Asst. Surgeon D. M'Andrew Vizianagrum, May 1818.

About the 15th of May 1818, cases of this disease were reported to have appeared in the Town of Vizianagrum; on inquiry, however, for several days subsequent to that date, none could be sufficiently authenticated.

About the 20th of May, slight cases occurred in the Cantonment, so slight, that had not the reports of the Epidemic having appeared in the Division, with a progression towards the south, caused suspicion, these cases might have passed for the common Cholera at that season.

On the evening of the 26th of May from 9 o'clock, the disease may be said to have commenced, in its severity, in the Cantonment; (having existed for some days earlier in the town) several of the sepoys were attacked in the course of the night, and one of those died, who did not apply for assistance in six hours from the time at which he was seized.

The disease as it now prevailed, although formidable in appearance, yet soon yielded to the means employed, and this variety obtained for about a month from its commencement; during which period, not one of those died, who applied for aid, either sepoy or follower.

During the following fortnight, from about the 20th June to the 9th July, the disease, although at first less alarming in appearance, yet eventually proved more dangerous and fatal; resisting every mode of cure, and proving fatal to numbers both of those who applied late, as well as to those who did so at an early period.

From the 5th of July the disease almost entirely disappeared, a few slight

Asst. Surgeon D. M'Andrew Vizianagrum, May 1818.

cases resembling those which preceded it, occurred at times; but, from that period, only two well marked cases of the disease, in its most unfavourable form, occurred, and these, in men of the 21st Regiment N. I. who had returned from duty at Vizagapatam.

During the prevalence of the disease, as being more convenient, and affording the means of immediate assistance, those affected were brought to my house, and accommodated in the out-offices, or in tents pitched for that purpose.

When a man was taken ill, it was usual for several of the other men to carry him to my quarters, in general attended by a number of his family and friends, several of whom it was customary to employ in the frictions that were deemed necessary.

After the patient was relieved, which, in the cases that occurred in the first month, was soon effected, he was put to sleep on a bed of straw, and two of the sepoys allowed to remain in attendance.

In visiting these patients at all hours of the night, I have found either the men in attendance, or some of the patient's relations, sleeping in close contact with him, on either side, and on the same straw-bed, with several others in different parts of the same apartment.

During the remaining fortnight, many of the patients not being relieved, people were kept in constant attendance, and, as the dejections were made in the apartment of the patient, the removing of those, changing the straw, exhibiting lavements, making continued frictions, &c. rendered frequent intercourse with the sick unavoidable.

Some of the men in hospital were taken ill and removed to my quarters.

The two men of the 21st who were seized after their return from Vizagapatam, were treated entirely in the hospital, and were for some days in a state, from whence I had little hope of their recovery.

The convalescing men were, for the time of their convalescence, returned to hospital.

During the whole of this period, not one, of all those who were, as above related, connected with the sick, were seized with the disease; nor was a man in hospital affected in consequence of the two men of the 21st being treated there, although there were about one hundred and sixty sick and convalescent men under the same roof.

From the foregoing relation, and judging from the disease only as it appeared at this station, there is no circumstance, even the most remote, that could originate a suspicion of the disease being of a contagious nature.

Of the cause of a disease so generally epidemic, the suspicion of a poison existing in, and propagated by means of the atmosphere, seems the most probable; but whatever that miasm may be, having once caused the disease, it does not appear that the disease produced, engenders a quality capable of re-producing its like.

Surgeon Colin Rogers, M. D. Vizagapatam, 1st June 1818.

The unprecedented mortality in the Carnatic European Veteran Battalion amounting to 12 out of 258 during the month of May, naturally calls for some explanation; on inspecting the Register it will be found, that, this has been principally occasioned by the prevalence, of a comparatively new, and certainly most formidable disease, a species of " Spasmodic Cholera," a name which it has obtained, although not perhaps, strictly nosological.

Without entering into any discussion on this point, suffice it to say, that

Surgeon Colin Rogers, M. D. Vizagapatam, 1st June 1818.

the complaint alluded to, was generally characterised by the suddeness of its attack, (invariably during the night), as well as by the violence, and rapidity of its progress, exhausting at once, as it were, the powers of life, without any reaction, unless fortunately arrested by the immediate exhibition of powerful remedies. The most prominent symptoms, were; frequent watery vomiting and purging, diminished heat all over the body, clammy sweats, extreme debility in the vital functions, particularly of the heart, as denoted by the failure of the pulse at the wrist, but above all by the violent cramps or spasm of the muscles of the extremities, and which, in all the more severe cases, extended to those of the abdomen and thorax, producing excruciating pain, and indescribable anxiety during their continuance, which was for a minute or two, when a relaxation took place—these cramps, or muscular contractions, appeared to be renewed by the slightest change of posture.

Between the 15th, and the end of the month, 11 cases of this species of Cholera occurred, of which, within that short period, 6 proved fatal in the course of the first, or second day. The 5 cases recorded in the Journal, had such general features of resemblance in the symptoms, and in the appearances discovered on dissection, that it might have been truly said " ab uno, disce omnes" and strongly impressed the idea of diminished action in the vital functions, and encreased irregular excitement in the animal and natural, but whether in the relation of cause and effect is a question I do not feel competent to determine. The practice resorted to, consisted in, the early and vigorous administration of calomel, in doses of ℈i, conjoined with frequent draughts of sulphuric æther, and laudanum, (in imitation of the plan adopted in Bengal, and published by authority), fomentations to different parts of the body especially the precordia, anodyne clysters, blisters, and brisk friction to the limbs with stimulating liniments. The æther and laudanum were either given in peppermint water or in brandy in the proportion of ʒi of each of the former, to an ounce or two of the latter, repeated every $\frac{1}{4}$ of an hour until some relief was obtained; when, afterwards, the brandy was given by itself. A very judicious History of a Spasmodic Cholera exactly akin to this is given by Curtis in his publication on " Diseases of India."

The temperature of Vizagapatam for the whole of May varied from 92° to 100°, but such is the humidity of the climate, that even this was felt to be extremely oppressive, yet there is reason to believe, that intemperance of various kinds exerted a more pernicious influence on the health of the European Soldiery at this time; in proof of which, it may be mentioned, that in a majority of the cases of Cholera, drunkenness had preceded the attack and consequently encreased the danger.

Asst. Surg. W. Smith, Masulipatam, 17th October 1818.

In conformity with the orders of the Medical Board expressed in Mr. Secretary Stewart's Circular Letter of the 3d of August, I have the honor to transmit to you an account of the Spasmodic Cholera, as it has prevailed in the Jails, and among the Native Inhabitancy of Masulipatam.

This disease originated with the Convicts, confined in the Fort, about the 10th of last July, and, for a considerable time, appeared only among those of one bomb proof, which was distinguished from the rest, by being on the sea face, ill ventilated, crowded, and extremely damp. These disadvantages were, in some measure remedied, but this bomb proof has throughout produced more cases comparatively than the other two, and it raged here for some time before any authenticated instances of the disease could be discovered in the pettah or among the troops. The prisoners at first, mistaking the complaint, or from their natural apathy, often remained a whole night, after the attack, without noticing their situation to any person, till they were discovered in the morning, lying quite exhausted, and almost inanimate. To these causes is to be attributed in a material degree, the aggravated form of numerous cases for the first three weeks, and this period was equally marked by a number of casualties, and by some as astonishing recoveries as ever presented themselves.

Asst. Surg. W. Smith, Masulipatam, 17th October 1818.

The symptoms exhibited an exact uniformity with those that have been so often described in other places. The attack was generally ushered in by some preceding indisposition ; listlessness, vertigo, nausea, and borborigmi, and a burning or uneasiness at the epigastrium ; the patient vomited the ingesta, and then some mucous water, and some time after the purging commenced. This produced some relief, the bowels and stomach remain quiescent for a little, and the vomiting and purging recur again. In many cases the purging is antecedent to the vomiting, and occasionally, there was a watery purging without any vomiting at all. Spasms of the limbs and abdomen which are generally so distressing to Europeans, I have never seen distinctly marked in a Native. The mucous water discharged occasionally exhibited streaks of blood, but seldom any traces of bile. This disease if not checked proceeds with great rapidity, the vomiting becomes more frequent, and the purging involuntary ; rapid exhaustion takes place, the surface becomes cold, and bedewed with a copious cold perspiration, the pulse becomes frequent and feeble, and then disappears from the wrist. The sufferer lies in a state of lethargy, his eyes dull and glassy, he moans, and often complains of an uneasiness in the chest. I have seen a patient whose pulse was gone, and carotids beating feebly, walk about with a tottering step, and making an effort to dispel his stupor answer the questions that were put to him with tolerable distinctness. Life appears lingering at the heart ready to be called into action, and any strong stimulant has an immediate effect upon the circulation, giving it some additional energy. Towards the close of life, the patient is completely comatose, the eyes insensible and sunk in the socket, the features collapsed, and the larger arteries beating feebly, the circulation at length dies away, and the patient gradually expires.

Taking Mr. Corbyn's practice for my guide at the origin of the disease, I administered opium and calomel according to his directions. Brandy, æther, and alcohol, support the flagging circulation, but with these alone, I could never suspend the vomiting or produce any permanent benefit. Opium appears the grand specific, and from its immediate action, I always preferred the tincture, in decisive doses of from 60 to 100 drops, combined with brandy, æther or arrack. In common cases two or three doses were found sufficient, but where the exhaustion was great, and the stomach very irritable, the dose was sometimes repeated 15 minutes after, and frequently during the day, being guided alone in its administration, by the degree of sinking of the pulse, and the vomiting and purging. If the laudanum was rejected, it was repeated immediately, but even in those cases, where it was vomited instantly, it never failed to produce sensible relief. When the irritability of stomach was very obstinate, I uniformly succeeded in suppressing it, by one or two enemas of 2 drahms of laudanum or upwards, which allowed of the exhibition of it by the mouth soon after. In protracted cases, 10 drahms of laudanum have been given to a Native, and some Surgeons have greatly exceeded that quantity. I have combined considerable doses of camphor with the laudanum, but did not find any difference in the result. In cases of great exhaustion, I had recourse to warm bath, which was probably an important succedaneum. Calomel was always employed, though relinquished by some Surgeons, on discovering, by reiterated experience, that the vomiting and purging could be controled by the opium alone with as much effect, as when combined with calomel. I however continued the calomel from principle, on observing that a total absence of bile was one of the characteristics of the disease, at least during the progress of its violent symptoms, and that after these have subsided, the patient always labors under bilious derangement of the stomach and bowels, and on administering calomel, and other purgatives, a considerable quantity of vitiated bile is generally discharged. Mr. Piper of the 30th informs me, that in all the cases of Cholera he opened, the gall bladder was distended with diseased bile. The passage of it into the bowels is probably shut up by a spasm of the duct, which the opium dissolves, and allows of the collected bile to flow into the intestines, Asst. Surg. W. Smith, Masulipatam, 17th October 1818.

giving rise to those bilious symptoms, that are almost invariably observed during convalescence. If this view of the case is correct, the advantage of administering calomel in limine, will be apparent, as it will probably assist in emptying the gall bladder, and also excite the action of the liver. In a few cases, a great redundancy of bile has followed the Spasmodic Cholera, occasioning the true Cholera Morbus, accompanied with irritability of stomach of a week's continuance, and copious vomiting of bile. In this, there was not the same sinking, and weakness of the circulation, as in the Epidemic Cholera. On the contrary, the pulse became full and soft, and the skin and extremities warm and moist, and this affords an illustration of Mr. Johnston's idea of connection betwixt the bilious and cuticular secretions. In these cases, opium and stimulants were abandoned, 5 grains of calomel were exhibited 3 times a day, and a blister was applied to the epigastrium, and this treatment arrested the complaint without any difficulty. When bile has been vomited, the patient has always recovered, and the same remark applies to the vomiting of worms. I have seen several large lumbrici vomited during the continuance of the Spasmodic Cholera, and all those patients survived, and another Surgeon here has made the same observation. It would perhaps be not very easy to discover what beneficial influence the adventitious presence of a lumbricus in the intestines could exert upon the disease, but the coincidence is worth stating, as it has repeatedly occurred.

That opium and depletion should sometimes be employed with equal success, in the same disease, appears perfectly enigmatical; but the effect of both apparently is to relieve the internal congestion. Bloodletting effectuates it directly by abstracting from the circulating mass, and opium as a diffusible stimulus, relieves the internal organs by exciting a determination to the surface. As it seems to be admitted universally, that there is an obvious determination of blood from the surface to the organs of the thorax and abdomen, as well as to the brain, frequent instances of internal hœmorrhage might be expected, yet I have only heard of one instance, which occurred to a European in the right lobe of the lungs. Stupor is always a prominent symptom, and many patients appear perfectly comatose. Decisive marks of inflammation have in some cases appeared in all the organs of life, but I have never had an opportunity of observing them. Bloodletting has therefore been employed occasionally with decided good effect, though not universally. But the knowledge of this fact, though it should prove an insulated one, that one man died by internal hœmorrhage, may in future direct the attention more particularly to bloodletting in the severer forms of the disease, especially among Europeans.

Bilious symptoms, as I have already remarked, have always appeared as a sequela of the disease. Repeated doses of calomel have therefore been found necessary, with castor oil, or jalap occasionally, till the fur leaves the tongue, and evacuations become natural. In many instances, a watery diarrhæa continues for several days, after the Cholera has subsided, and this was generally obviated by 60 drops of laudanum morning and evening, and occasional doses of calomel. It may not be out of place to remark that Sydenham notices the same sequela of the Spasmodic Cholera, and exhibited laudanum for it in the same manner, though in diminished doses.

This disease appears to have prevailed chiefly among the lowest classes. The result of repeated enquiries made to determine this point, is that people in easy circumstances, are not often attacked by it; that is to say, that people with generous and nourishing diet, better clothing, and good houses, have suffered comparatively much less, than those who do not possess these advantages, or that possess them in a minor degree. The sepoys have suffered less than the inhabitants of the petta and the surrounding country. Gentlemen have seldom suffered, European privates much oftener. The prisoners of the dry bomb proofs have suffered less than those shut up in a damp one. Curtis remarks, that it was an opinion in the fleet, that the most irregular and worst clothed men were most readily attacked by it; though some of the best clothed and most orderly

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men were also affected. Drunkenness among the Europeans, appears to have been a predisposing cause; and debility in general either direct or indirect and exposure appear to predispose to the disease. These circumstances tend to corroborate the opinion, that the proximate cause is a suppressed perspiration, and spasm of the extreme vessels; but its subsidence here, at the time the rains became most severe, when the weather was chilly and damp, would seem to invalidate this opinion and lead to the belief, that it is not occasioned by obstructed perspirations, but by some noxious quality of the atmosphere, and that want of nourishing food promotes its action.

I am happy to state to you that the Cholera has almost died away in this neighbourhood. A few slight cases of it occasionally occur or rather of a mucous watery diarrhæa, without any vomiting, which is easily suppressed by one or two doses of laudanum, and a purgative afterwards. No fatal case has occurred in the Jails for nearly 6 weeks.

One attack of this Epidemic is no protection against a second. Several instances have occurred of two attacks in the same individual.

Four Native Doctors have been employed in the Petta during 10 weeks, and have administered medicine to 1100 people. The casualties have amounted to 104 in their practice. 100 men died without medical aid, chiefly before the Native Doctors were employed. In so extended a place when 50 cases were sometimes scattered over it, in one day, it was impossible to give efficient aid to them all; and many of them were in articulo mortis before the Native Doctors were even summoned. 110 cases have occurred in the Jails and 11 deaths, 2 were dead before I saw them, and in 2 others animation was almost extinct before I reached the hospital. 7 prisoners therefore only died under medical treatment.

Asst. Surg. W. Smith, Masulipatam, 4th March 1819.

In reply to your Circular Letter of the ultimo, regarding the Spasmodic Cholera, I have the honor to inform you that I have few facts to add to the account I addressed to you, in my Letter of the in the following statement I will therefere recapitulate many of the leading circumstances that were detailed in that report.

This disease originated with the Convicts confined in the fort about the 12th of last July, and for some time was confined chiefly to one bomb proof, where from its situation and construction it raged with peculiar virulence. This bomb proof was low, damp, ill ventilated and very crowded, and it accordingly produced a much greater number of cases than the other two, which were more comfortable and commodious. The prison in the petta which is dry and open, and perfectly will ventilated produced a smaller proportion of cases than the bomb proofs, and it was here much later in making its appearance. The disease appeared in the petta about the 20th of July, and it prevailed severely during the whole month of August and beginning of September. It was confined chiefly to the lowest classes, as Epidemics generally are. Few people in easy circumstances were attacked by it; that is to say, people with generous, and nourishing diet, good clothing, and good houses have suffered comparatively much less than those who do not possess these advantages. The sepoys suffered less than the inhabitants of the petta and the surrounding country. Peons and servants, both public and private, people who are regularly paid and well fed, escaped almost entirely. The shepherds who are a poor meagre race with little clothing, and are much exposed to all varieties of weather, appear to have suffered most, and this was proved by as authentic a document as could be obtained. Curtis remarks, that it was the opinion of the fleet that the most irregular and ill clothed men were most readily attacked by it, though some of the best clothed and most orderly men were also affected by it. All the Artillery privates that were attacked by it here, were men of the most irregular habits, while every officer in the station escaped, and only one gentleman was seized by it. Indeed debility in general either

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direct or indirect appears to increase the predisposition to the disease, and in this respect it is analogous to many other epidemic diseases, and also to those that originate from marsh miasma.

At the period the Spasmodic Cholera broke out at Masulipatam, the weather was temperate, a few slight showers had lately fallen which had reduced the heat of the atmosphere. About a fortnight afterwards the monsoon commenced; the heaviest rains fell about the middle of September, and it was about this time that the disease began materially to decline. All our systematic writers appear inclined to attribute Cholera to obstructed perspiration, and the same opinion has been advanced in this country regarding the spasmodic kind. That the bilious Cholera may frequently originate from this is very probable, but this opinion with regard to the Epidemic is hardly tenable, for in that case it would have become most prevalent during the heavy rains, when the air is cold and damp, and of course most likely to check the perspiration. On the contrary it broke out and prevailed severely during the mild, and part of the rainy, weather, and disappeared altogether at this place just at the heaviest period of the monsoon. Neither heat nor cold appear to modify it. It prevailed severely in the coldest seasons of the north of India; it traversed the Northern Circars and the Carnatic, during the hottest and the coldest seasons, and it has never been perceptibly obstructed in its march, by any of the various climates that it has pervaded.

Every fact that I am acquainted with, militates against the idea of its being contagious. Had it been so, the petta would probably have first received the contagion from its free intercourse with the surrounding country; at least it is fair to infer that the convicts who are shut up in a bomb proof in a remote corner of the fort would not have been the first to receive the contagion. And a contagious disease originating in the bomb proofs would have first involved the contiguous houses, and have spread all around with some kind of regularity. But the inhabitants close to the jails did not appear to suffer at all from their proximity to the Convicts more than their neighbours. Not one of the peons in charge of the prisoners, or the medical attendants who were constantly administering medicine to patients in all stages, were ever affected by the disease; and if it had been contagious it is not possible to suppose that the whole of them would have escaped, exposed as they were to such a focus of disease. Had the Spasmodic Cholera been contagious it would have been imported from Bengal to Madras and the neighbouring ports nearly two years ago; for the contrary opinion has been so universally entertained that not one ship ever performed quarantine; yet we have not heard of Bengal ships at sea suffering from it, or of its being imported by sea into any port of the peninsula of India. It visited this station in July and did not reach Madras till December, and there is such frequent intercourse betwixt the two ports, that had the disease been infectious it would have been imported from this to Madras in less than 10 days, but it did not reach the Presidency till 5 months afterwards, in its progressive course through the Circars and Carnatic. These are all the facts, that I have been able to collect, which bear on this point, but taken conjointly, I submit to you with deference. They go far to prove that the disease is *not* contagious.

Asst. Surg. T. Sutton, Nellore, 1st March 1819.

The Zillah of Nellore, through which I am about to describe the progress of the late Epidemic, is nearly 180 miles in length from North to South, and its breadth varies from 40 to 60 miles, being skirted by hills on the West which separate it from the Ceded Districts, and on the East, by the sea. The face of the country is flat, with scarcely a hill of any magnitude, and the greater portion of it is covered by low and thick jungle. Towards the sea there is a vast deal of paddy cultivation, but at no season of the year is it covered by any extensive sheets of water, except from the irrigation of the cultivated grounds.

The Spasmodic Cholera first made its appearance in the northernmost

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villages of the zillah on the 2d of August 1818, and by the 5th October it had reached the most southern part of it. In twelve days it had travelled 32 miles; in twenty seven, the next 80 miles; and in two months it had spread itself over the whole of the zillah, with the exception of two divisions, Goondavole and Toommalatalapoor, which were not visited by the epidemic. It seemed gradually to extend itself on all sides, and it made its appearance in the different villages on the east and west side of the high road about the same time. The two divisions which escaped the epidemic are the most south-western of this zillah, and several towns and villages on the western frontier escaped altogether. In no case did it appear to be attended with such mortality in the western divisions, as in those of the eastern side of the zillah.

I have annexed tables shewing the numbers attacked, the casualties which occurred in each division, with the number of those who recovered. In the two principal towns, Ongole, and Nellore, the deaths were but few in comparison with what occurred in the villages around; this was no doubt caused by the measures which had been taken by the local authorities, to afford early assistance to those who were attacked by the disease. By my residence in the latter town, I am enabled also to furnish a table of the cast, sex, and age, of those who were attacked. By this it will be observed, that it was not confined to Hindoos more than to Musslemen. A circumstance somewhat singular, which I am about to relate, and which I cannot readily account for, occurred under my own observation. This was, that the highest and lowest classes of Hindoos, escaped the attacks of the epidemic almost entirely, viz. the Bramins and Pariahs. In the town of Nellore, the first of these certainly inhabit clean and dry houses, and are most of them in the service of the Circar which enables them to feed well; the latter, although generally poor are hardy, and in the habit of indulging in the use of animal diet, whenever they can procure it; and on all occasions take as much spirits, as is within their reach. Their exemption may have arisen from their being on all occasions more fitted, from their better living, to resist the effects of such debilitating causes as seemed to pervade, generally, during the continuance of the epidemic. I uniformly observed that the occurrence of a Native Feast at this time, was followed by an encrease to the sick, and that most of those attacked after fatigue, and exposure during the night, fell victims to the disease. This was particularly the case with the Musslemen during the Mohurrum, at which time many exhaust themselves by the bodily exertions they make, in personating different characters. Having mentioned the approach of the epidemic from the north, I shall also state that it first disappeared in the northern divisions, and entirely quitted the zillah by the 15th of January 1819.

In describing the symptoms of this disease, I must first state, that, the whole of my observations apply to the native sick, as no European in this zillah was attacked by it.

In the town of Nellore. upwards of eleven hundred cases were treated with medicine, the greater part of whom I saw at some time during their sickness. The disease was generally ushered in with violent vomiting, and purging of a fluid almost colourless, severe cramp in the limbs, great heat in the precordia, with an insatiable thirst, skin cold, and clammy; pulse at the wrist feeble, and soon imperceptible; countenance shrunk, and unless relief was early afforded these symptoms became much aggravated, and the patient fell a victim in about 12 or 14 hours from the commencement of the attack. On examination of the bodies of several who died, I could not trace any marks of disease in the abdominal or thoracic viscera, although in no case, was there a vomiting or purging of bile, nor any of that fluid to be discovered in the intestines; still in every subject whom I examined, the gall bladder was distended with bile of a healthy appearance. The liver was perfectly sound, as were the whole of the abdominal, and thoracic viscera. In one case the vessels of the membranes of the brain were distended. This was in a convict, confined in the jail of this zillah, about 66 years of age.

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Previous to giving a detail of the treatment which I adopted, I shall first state that almost every case of the Spasmodic Cholera proved fatal when left to the treatment of the village doctors. The plan they pursued was the administration of such simples as they find successful in the treatment of the true cholera morbus, viz. a decoction of the carminative seeds, the womum or sison amni Lin. the gewla, ginger, and pepper, with small doses of opium. Success not attending their practice, the patients were left to themselves, and death soon put an end to their sufferings. It will appear necessary that I should notice the cause why so many more casualties occurred in some talooks than in others. The disease first appeared in these, and on its being announced that it had done so, we were also informed of the casualties which had taken place. Medicines and instructions were issued to these as well as the other talooks, but in them the epidemic had committed great havoc ere they were received—In many of the small villages there was not any person to render assistance to the sick, and where it was within reach no other remedy but those mentioned was employed.

From the general success which was stated to have attended the practice recommended by Mr. Corbyn of the Bengal Medical Establishment, this was the first which I adopted, and although it was occasionally varied, I found myself obliged to revert to it as being the best.—I directed the native practitioners to commence with a dose of 80 or 100 drops of laudanum, and to repeat it every ten minutes until the vomiting ceased—In case this was not effected by two doses, to give fifteen grains of calomel previous to the administration of the third, In almost every case this put a stop to the vomiting, which the laudanum alone scarcely ever did. If the purging continued, the same dose of calomel, with the laudanum in some aromatic vehicle, was repeated every quarter of an hour. In several cases it was necessary to administer two drahms of the calomel, and six drahms of the laudanum, ere these symptoms were allayed. The vomiting was the one which was most distressing to the patient and his attendant. From the coldness on the surface of the body with the extreme languor in the circulation of the cuticular vessels, it became a most desirable point to restore the latter, and remove the former by the application of external warmth. The medicated bath was made trial of, but from the utter aversion of the natives to allow their bodies to be touched by water, when labouring under the common cholera morbus; and their aukwardness in making use of it, made me feel happy in having it in my power to substitute a vapour bath. I had been furnished with the mode of preparing this by a friend, just before the epidemic made its appearance in Nellore; and as this plan has long since been submitted to the notice of the Medical Board, I shall merely mention that I simplified the method of preparing it, so that the native practitioners might employ it themselves, and which they did most readily, having witnessed the good arising from its use. A common country cot covered with two cumlies, the sides of which reached the ground, under this was placed a flat earthen dish with some ignited arrack, in the middle of which was a cup containing the vinegar and camphor. The patient lying on the cot, and covered by a cumlie soon felt the warmth and was almost invariably relieved from the cramp, a perspiration broke out, which was attended by a diminution of all the distressing symptoms. After the patient had remained 12 or 14 hours without any vomiting or purging, I usually gave a dose of castor oil, after the operation of which he was quite free from complaint. Anxious to try the effect of venesection, I employed it in six cases, but without any marked good arising from its use, except in one; that of a female aged 22 years tolerably robust, and in whom the disease had been much aggravated by cold bathing. The spasms in this case were universal, and it was impossible to separate the jaws to administer medicine. Sixteen ounces of blood were taken away, when the spasms subsided sufficiently to admit of swallowing. The vomiting continued for some time and was only allayed by the usual dose of calomel. Notwithstanding what I have mentioned regarding the use of the lancet not having been generally followed by relief to the patient, I would on every occasion where there appeared any fullness in the system, or a tendency to

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inflammatory disease in the patient, have made use of it more freely. It is the mode of practice, which I understand has been by far the most successful in the treatment of the Spasmodic Cholera, where it has occurred amongst Europeans. Had I discovered on examination of the bodies of those who died, any marks of inflammation, or a turgid state of the vessels in any of the abdominal or thoracic viscera, or of the contents of the cranium, in any other but the old man already mentioned, I should have pushed its trial to a greater extent than I did. In no case which occurred at Nellore, was the attack followed by uneasiness of any description, except debility for a few days, from which circumstance I was induced to think, there could not have been any severe injury sustained by either of the abdominal or thoracic viscera. The application of liquid blisters to the epigastric region afforded great relief, and in such cases as would submit to the use of enemas, containing from 5 to 6 grains of opium, the purging was frequently stopt, when all other remedies had failed.

The gradual progress of the Spasmodic Cholera from the northern to the southern parts of the peninsula, has no doubt given rise to the opinion, that it is contagious, in the minds of many ; and to this you particularly direct my attention and request my ideas on it. It is this circumstance alone, which could for a moment have excited in my mind the idea of its being contagious, for in no instance, during the time it continued in this zillah, was it communicated by the sick to their attendants ; not one of whom was attacked by it. To an attentive observation of this I was directed, from a fear I entertained of being unable to prevail on the attendants to do the duty that was allotted them, of fomenting the patient for hours together. It was some time before their own fears were dispelled on this head, and which was only effected by their witnessing the non-communication of the disease to others. In families consisting of 12 or 15 people, often only one or two were seized with the complaint.

There had been no sensible change in the atmosphere previous to the approach of the epidemic, nor was any effect on its progress produced by the setting in of the rains ; during the whole of which it continued. I observed that on its first appearance the symptoms were mild, and after seven or eight days continuance it seemed, suspended for five or six, when it recommenced with increased violence. Previous to its disappearance, it again became milder, and fewer casualties occurred.

I am at a loss to account for certain towns and villages, such as Voodiaghurry and Vencatagherry not having been visited by this epidemic ; unless from the circumstance of their being situated close to the western hills. The two divisions, Goondavole and Toommalatalapoor are also both of them on the south western extremity of the zillah. Many of these places which escaped are large and populous, much frequented by travellers and merchants, and would, I imagine, have been visited by the Spasmodic Cholera had it been contagious. The country on that side of the zillah is certainly much higher than in any other part of it.

Asst. Surg. T. Sutton, Nellore, 5th March 1819.

I have the honor to forward for the information of the Medical Board, the statement of the progress of the Spasmodic Cholera through the zillah of Guntoor, and district of Palnaud.

In my letter to the Board of the 23d September 1818 I informed them of my having repaired to Guntoor in compliance with the instructions conveyed to me in their letter of the 17th September, and that I found the epidemic on the decline.—It had almost disappeared in the town of Guntoor, but it continued to exist in the distant parts of the zillah.

On having an interview with Mr. Oakes the Collector and Magistrate, I requested his assistance in forwarding to his head servant in each division of the zillah, a circular letter which I had drawn out, containing a form of report of the

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time of the disease appearing, the period of its continuance, with the number of deaths, &c.—This he complied with, and they were immediately dispatched—I regret however not having received that gentleman's reply containing these reports until within the last week, and I have consequently been unable to make an earlier reply to that part of the Board's instructions, as to the progress of the disease.

In forwarding the accompanying statement prepared from the reports of native officers, I am aware that there may be errors in them, but when I observe that these people had been particularly ordered by the Collector, to note down every thing which occurred within their observation during the continuance of the epidemic, I conceive that the number of deaths reported certainly not less than what really occurred.

On the western extremity of the zillah of Guntoor, is situated the district of Palnaud ; both are skirted by the river Kistnah on their northern boundaries, and the greatest extent of these countries is from east to west ; the breadth of the zillah from north to south, not being much more than half its length.

By a reference to the returns sent in, it would seem that the Spasmodic Cholera made its appearance about the same time in the different villages, situated along the southern banks of the Kistnah, from the eastern to the western extremity of the zillah and district, about the end of July 1818, and gradually extended itself to the southward, ultimately quitting the country by the middle of November 1818.

From the description given me by Mr. Oakes and the Native Doctors, whom he had entertained, of the symptoms of those who were attacked by the Spasmodic Cholera, it seemed to be the same disease which had so often been described by the different medical officers in Bengal. In the few cases which occurred during my stay at Guntoor, they were certainly the same.

The patients were generally seized with vomiting and purging, of a fluid almost colourless, great pain and heat about the precordia, spasms in the muscles of the extremities, skin cold and clammy, pulse small and soon imperceptible.

The treatment which had been adopted by the Native Doctors, recommended by the Collector, was the administration of calomel in doses of 15 grains with large doses of laudanum from 80 to 120 drops. This I found had been their practice previous to my arrival at Guntoor, and from the returns it would appear to have been attended with great success, for the casualties in that town and its immediate neighbourhood are certainly few, compared to other parts of the zillah.

Large quantities of pills, composed of opium and camphor, had been sent by the Collector to the head servants in the different villages, with instructions how to administer them.

The epidemic made its appearance about the setting in of the westerly rains, and continued until the whole of the rainy season was over. It appeared to be more fatal during the blowing of the bleak westerly winds, and seemed more so in those villages, which were situated in the neighbourhood of tanks.

The banians living in the town of Guntoor escaped almost entirely. The street they occupy is the only wide and dry one in the whole town. The street inhabited by the bramins is close and damp ; and they suffered in as great a proportion as any other class of people.

With respect to the opinion of this disease being contagious, I can only remark that the Native Doctors had no apprehension on that score for themselves, and on strict enquiry I could not learn of any of those who attended on the sick, having been attacked by the Spasmodic Cholera.

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Statement of the progress of the Spasmodic Cholera through the Zillah of Guntoor and District of Palnaud, with the number of Deaths and Recovery from it, in each Division.

	Names of the Divisions.	Period of the continuance of the Epidemic.	Numbers attacked.	Deaths.	Recovered.
1	Guntoor	25th July to 28th Oct. 1818.	1620	179	1441
2	Mungalagherry	3d August to 5th Nov.	608	239	369
3	Vungheeporum	2d August to 2d Oct.	263	57	206
4	Baupetlah	25th August to 30th Oct.	121	40	81
5	Moodocoor	27th July to 19th Oct.	342	104	238
6	Innacondah	22d August to 22d Oct.	228	39	189
7	Raypully	2d to 30th Sept.	207	33	174
8	Rajahpettah	14th August to 11th Oct.	236	105	131
9	Butleprole	14th to 30th Sept.	125	21	104
10	Atchamapettah	3d August to 15th Oct.	370	96	274
11	Narsarowpettah	2d August to 20th Oct.	560	92	468
12	Condaveid	24th August to 25th Sept.	417	171	246
13	Colleparah	29th July to 19th Oct.	155	76	79
14	Paralah	18th to 30th Sept.	4	4	0
15	Datchapilly	26th July to 13th Nov.	161	80	81
		Grand Total	5417	1336	4081

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I have thus long delayed forwarding a statement of the progress of the Spasmodic Cholera through this zillah, on its second appearance as an epidemic disease, with the list of casualties and recoveries from it; in the hopes of being able at the same time to report its departure. This seems now to be the case, and although there is occasionally one or two attacked by the disease in distant parts of the zillah, it can be no longer considered as a general epidemic disease.

I mentioned in a report forwarded on the 1st March, 1819; that the disease had disappeared in the district of Nellore, and that it had done so much earlier in the district of Ongole: when on a visit to the latter place at the end of March, I found that a sporadic case of Spasmodic Cholera was occasionally appearing in the different villages around. In the town of Nellore there were generally two or three during the month.

About the middle of April the disease seemed again to prevail as an epidemic, first appearing in the northern-most Talooks of the Ongole district, gradually extending itself in a southerly direction. It seemed to travel in the same ratio as on its visit last year. It first made its appearance in the town of Ongole on the 16th May 1819—and in the town of Nellore on the 3d July. It disappeared in the former place by the end of August, and at the latter by the end of September. There is however occasionally a case of it occurring in Nellore. In the course of its progress this year, it visited such parts of the districts as escaped during the last, and was particularly fatal in the villages and towns situated at the foot of the hills on the western frontier. It likewise visited almost all the villages on the sea shore, whilst it was less severe in the towns on the high-northern road. I observed in my last report forwarded in March, that those places had escaped the epidemic almost entirely, and that in two of the talooks, Toommalatalapoor, and Goondavole, it had never made its appearance, in 1818. The first accounts which I received of its existence in Cotah, the southern-most talook of the Nellore district, was dated on the 1st August 1819:

Asst. Surg. T. Sutton, Nellore, 15th October 1819.

It had almost entirely disappeared in the Ongole district by the end of August, and by the end of September in that of Nellore.

The disease has been much more fatal this year than in the last, and from the reports which have been furnished to me, it seems in almost every case to have been much more rapid in its termination, and generally fatal, unless medicine was administered. Of such cases as came under my own observation in this town, it had certainly put on a much more aggravated form than it then did. That dreadful prostration of strength, coldness of the skin, interrupted circulation through the smaller arteries, came on at a much earlier period. It was from this state of exhaustion we found such a difficulty to rouse the patient, and in most cases where no medicines had been administered until these symptoms had made their appearance, all attempts at affording relief proved fruitless. I observed that there was less difficulty in checking the vomiting, and purging, and in many cases the former symptom was wanting. It was not unfrequently noticed, that the sudden prostration of strength came on without any previous purging but it was soon followed by it. In some instances in the town of Nellore death ensued in three hours from the first attack of the disease, and where the patient had only one alvine evacuation of watery fluid.

With respect to the plan of treatment which was pursued in this town, as well as that which was recommended to be followed by the native Doctors in different parts of the zillah, I have little to add, beyond what was mentioned in my last report.—They were recommended to give pills composed of opium, camphor, and black pepper, each two grains, and to repeat them every half hour until the symptoms of vomiting and purging were allayed. To occasionally vary this plan with that of giving calomel, in doses of fifteen grains with 100 drops of laudanum. The former was the usual mode of treatment, seemed to succeed as well as the latter, and the natives were less averse to its use—after witnessing a few cases treated with calomel, which were followed by a slight ptyalism, the friends of the patient would seldom allow of the native doctors to administer it. The vapour bath was constantly used, and to remove the extreme exhaustion stimulants were given internally, either a cordial mixture of camphor, or what was more generally made use of, half a pill rubbed down in an ounce of arrack, every half hour. The topical application of blisters, or such vegetable substances as excoriate and act as a blister. Frictions of the extremities with a warm cumlie were constantly employed, and in the majority of cases which I witnessed seemed attended with more benefit than the use of the bath. In all such cases as came within my notice, I employed venesection where there was any chance of obtaining blood, and I think with the best effect.—Although the quantity obtained was small, still where it produced syncope, the patient always recovered. In several of these cases the quantity abstracted did not exceed ten ounces, it being impossible to obtain a larger quantity either by the immersion of the arm in warm water, or the use of the bath.

I noticed in many cases brought to the hospital at Nellore, great determination of blood to the head, and that the spasms were unusually severe.—The latter symptom commonly subsided two hours before death, and it was generally observed that the purging also ceased about the same time. Whereever blood could be abstacted this was attempted, and blisters applied to the scalp and neck.

A sepoy recruit, aged 20 years, who was a stout hale man, was brought to the hospital within half an hour from his being attacked; he had only vomited once, and had two alvine evacuations seemingly of pure water, pulse scarcely to be felt, was insensible, with his arms fast locked across his chest. It was with difficulty one could be sufficiently extended to admit of his being bled, twenty ounces were taken away; whilst the blood was flowing the spasms relaxed and he became sensible.—A dose of camphorated mixture with thirty drops of volatile alkali and laudanum was given him.—The convulsive fit returned in about

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half an hour, but continued only a few minutes. A blister was applied to the scalp and a few doses of the mixture given throughout the day.—He had no return of purging and on the following morning was free from complaint. The same success attended the use of the lancet in several cases where the symptoms of nervous irritation were less strongly marked. There was one symptom attendant on the epidemic which I do not recollect witnessing last year, viz. deafness. The patient usually complained of it himself, and this often when all other symptoms seemed relieved. It was a most unfavourable occurrence, and in only three cases did the patients recover where it had taken place. It was not accompanied or followed by any delirium, and the patient gradually sunk until death closed the scene: retaining his mental faculties until the last. This symptom made its appearance in a patient whom I had bled, and he was one of those who recovered from the disease.

From the reports sent in by the native practitioners stationed in different parts of this zillah it appeared that they were successful in their treatment of the epidemic only, in such cases as they were called to, previous to the appearance of the cold skin and cessation of pulse at the wrist. A few of them who had been taught to bleed occasionally made use of the lancet, but they stated the friends of the patients would seldom permit it to be done. In some of the villages the mortality was dreadful; and in reply to enquiries which I made, as to whether medical assistance had been rendered to the sick, it almost invariably proved that the inhabitants had refused it, and contented themselves by making sacrifices and propitiating the deity, whom they imagined to be punishing them with this disease. Numerous instances have occurred in these districts of their having dreadfully mutilated individuals, whom they suspected of sorcery; and several cases are now before the criminal court at this station. I mention the above circumstances lest it might be supposed, that the necessary exertions were not made to administer medicine in those places where the mortality was so great. It seems, the general opinion of the more intelligent natives in this part of the country, that where the patients are left without medical assistance the disease terminated fatally.

The period of the continuance of the Spasmodic Cholera as an epidemic disease in these districts this year, was from the end of April to the end of September: and it is however still occasionally making its appearance. It first appeared in the northern parts of the Ongole district, gradually extending itself to the southward and westward; disappearing also from those places where it first broke out, so that its continuance in any large town or tract of country scarcely ever exceeded three months. The weather had been mild and temperate throughout the whole of this period. There were occasional falls of rain, but no sensible change in the temperature of the air seemed to affect the epidemic. The season of hot land wind which generally prvails here during the months of May, and June, has this year been unusually mild; the Thermometer never above 96° and that only for three days in the month of May. At no time during the presence of the epidemic did any of the attendants of the sick become affected by this disease, nor was any of the men in the hospital with other complaints attacked by it. Exposure to the cold wind seemed the most frequent exciting cause, and in most of the sepoys who were seized with the disease, it made tis appearance whilst they were on guard.

In reviewing the total number of the casualties reported from distant parts of the zillah, as having been caused by the Spasmodic Cholera during this its second visit, I beg leave to mention that the native revenue and police servants had become more active, and sent in their reports much more regularly than they did last year. This may in some degree account for the proportionate number of deaths, appearing so much greater in the distant villages. It must however be confessed, that the disease was much more unmanageable, for by examining the proportion of deaths which occurred in the town of Nellore—it would seem that about five in the hundred was the average during its first visit, whilst twenty was that of its second.

ASST. SURG. T. SUTTON, NELLORE, 15TH OCTOBER 1819.

GENERAL STATEMENT of the numbers attacked by the Spasmodic Cholera in the Zillah of Nellore, with the number of deaths, and recoveries from it from 2d August 1818 to 16th January 1819.

NAMES OF DIVISIONS OR TALOOKS.	TOTAL OF EACH TALOOK.			REMARKS.
	Attacked	Dead.	Recovered.	
Chendaloor	100	89	11	The Sick were treated in this Division by simple remedies, (as decoctions of various carminatives) by their village Doctors.
Enamanamelloor	13	10	3	The villages in this Talook were small, and few of them had a Native Doctor.
Ongole	531	43	488	In this Talook there are several Native Doctors who were taught to administer large doses of laudanum and calomel.
Putchawa	100	41	59	Most of the villages in this Talook are small and but few had any Native Doctors in them.—These occasionally made use of laudanum in large doses.
Dauvagoodoor	57	19	38	The villages are small and many of them without the means of medical aid.
Buddapoody	152	47	105	In this Talook were some of the Native Vaccinators who were successful in their practice of giving opium.
Doottaloor	11	5	6	The two villages in which the epedimic appeared were small.
Calegherry	41	14	27	The villages are small but in some of them are Native Doctors, who were instructed to give opium and camphor.
Cauvally	48	28	20	The villages are small but in some of them are Native Doctors who were instructed to give opium and camphor.
Varegoontapaudoo	90	53	37	The villages small, but in few of them was any assistance given to the sick.
Ravoor	83	40	43	Do. Do. Do. Do
Sungum	107	50	57	The villages in this Talook were furnished with medicine as pills of opium and camphor and laudanum.
Talamunchy	159	34	125	The villages in this Talook were furnished with medicine from Nellore.
Nellore	1222	87	1135	In most of the villages of this Talook, medicines prepared of opium and camphor, laudanum and calomel were administered.
Survapully	65	14	51	A Native Vaccinator stationed in this Talook who instructed the Native Doctors in the administration of laudanum and calomel.
Cotah	107	4	103	In this Talook was stationed a Native Vaccinator who remains principally about Cottah and assisted in giving medicines composed of opium and camphor, laudanum and calomel.
TOTAL.	2886	578	2308	

GENERAL STATEMENT of the numbers attacked by the Spasmodic Cholera in the zillah of Nellore, with the number of deaths, and recoveries from it, from 10th April to 30th September 1819.

NAMES OF DIVISIONS OR TALOOKS.	TOTAL OF EACH TALOOK.			REMARKS.
	Attacked.	Dead.	Recovered.	
Chendaloor	462	124	338	The Inhabitants of this Talook readily took from the Native Doctors medicine which they had been furnished with.
Enamanamelloor	828	300	528	Do. Do. Do. Do.
Ongole	1795	281	1514	The Inhabitants of this Talook readily took from the Native Doctors medicines they had been furnished with.—The Native Practitioners in this Talook were numerous, and intelligent men.
Putchawa	257	195	62	Medicines and instructions had been furnished to the Native Doctors in this Talook, but the Inhabitants were reluctant to avail themselves of it.
Dauvagoodoor	282	109	173	
Buddapoody	289	81	208	There were several intelligent Native Doctors in this Talook to whom medicines and instructions had been furnished, and in whom the Inhabitants had great confidence.
Doottaloor	216	72	144	
Calegherry	92	34	58	
Cauvally	65	38	27	
Varegoontapaudoo	250	182	68	The Inhabitants of this Talook were generally averse to take medicine when offered to them.
Ravoor	176	85	91	
Sungum	251	167	84	
Talamunchy	294	173	121	
Nellore	571	229	342	
Survapully	169	89	80	
Goondavole	70	48	22	
Tommalatalapoor	210	125	85	
Cotah	143	99	44	The people of this village refused all medical aid which had been sent to them.
TOTAL..	6420	2431	3989	

ASST. SURG.
T. SUTTON,
NELLORE,
15TH OCTOBER 1819.

Asst Surg. P. Scott, M. D. Madras, 31st March 1819.

On the 7th instant I had the honor to receive your circular letter of the 28th of January, together with its accompanying papers; and I beg to inform you, that I shall give every attention to the subjects to which those relate.

As it appears by the above communication, that the Medical Board are desirous of obtaining further, and more minute information respecting the Spasmodic Cholera, with a view chiefly, of ascertaining whether the disease is propagated by contagion, I have been induced to avail myself of this opportunity of throwing together, and submitting to you, such remarks as I was led to make generally on that formidable disorder during its late prevalence at this place.

The epidemic, it may first be observed, manifested itself here in a more gradual manner, and under a form perhaps rather less aggravated, than what has generally (so far as I have been enabled to ascertain) been observed of it in those places which it has visited in the interior of the country. It began to prevail amongst the natives residing in the north east side of Vipery, very early in October, but, on what day, it is not determined. Instances of it however, and such as I conceive to be well authenticated, were afterwards brought to my knowledge, which occurred so early as the 5th, though I had not an opportunity of actually seeing the disease until the 8th of that month, when I communicated with you on the subject, and gave as I afterwards understood, the first official intimation of its existence at this Presidency.

From that time until the establishment of the temporary hospitals, I had occasion to see a considerable number of persons affected with the complaint, not less than 60 or 70, and being desirous of obtaining every practical information in my power, respecting the progress and nature of so novel and fatal a disease, I was induced to bestow much of my time in visiting the sick at their own residence, and had the remedies regularly administered to almost every patient in my own presence.

From the opportunities thus afforded me, both during that period, as well as afterwards, of a personal intercourse with the inhabitants in different situations, I found that the disease, from having been at first confined within the narrow limits of a few huts, and the streets immediately contiguous, very speedily began to be more widely diffused. From the north east side of Vipery, it extended in a southerly direction and without affecting at first the inhabitants in the intervening space, excepting in a very slight degree, made its appearance successively or nearly simultaneously in Chintadrepettah and in Triplicane. After which, it speedily became more or less general over the whole settlement, and seemed rather to dip here and there, than to proceed in any regular or connected track.

The disease, it is well known, was subject to much fluctuation, both in regard to its appearance and duration as well as in its extent and violence.—In some places it raged pretty steadily, and severely, and in others, it was rather slight and transitory, declining and disappearing for a time, and again returning, sometime with rather more violence, but throughout attacking comparatively few individuals, and these in detached and scattered situations.—It prevailed more generally I have understood in the environs and adjacent villages than *in* Black Town, and more especially in that tract extending from the north east side of Vipery to the southward comprehending Casapet, Choolley, Narrainpoliam, Perimottoo, Chintadrepet, Comalesweren, Covil, Triplicane and St. Thome—Numerous cases occurred also at Royapooram, but, it is somewhat remarkable that it should have been so late in making its appearance at that village, and that it should have left it so entirely after it continued to commit its ravages in other parts of the settlement where it had though perhaps, with some unsteadiness, prevailed from the commencement.

Certain local circumstances and peculiar states of the weather, appeared to have a considerable influence in occasioning these variations---dry clean open

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situations were obviously the most healthy, while, most filthy situations and such as were inhabited by the poorer classes, generally presented a great number of sick, and those frequently of a bad description. This was well illustrated at Vipery, in a situation abounding with stagnant water, the receptacle of every species of filth, but more especially at the spot, where, I strongly suspect the epidemic first broke out at Madras, and where many fell victims to its severity. For, it was observed to be more prevalent amongst, and indeed for the first two or three days almost exclusively confined, to the natives residing in some huts, about which, much offensive and corrupted matter had been accumulated, while those occupying the houses almost contiguous suffered but slightly, though comparatively more, than the inhabitants in the adjacent and more distant streets.

It was not however as may be supposed at Vipery only, that the operation of the local circumstances now mentioned was to be observed, for the disease appeared to be commonly more prevalent in all those situations where considerable humidity existed combined with putrid effluvia, and where the inhabitants owing to bad clothing and lodging, were consequently much exposed to the influence of the weather. This may probably account for the greater sickness and mortality at some stations than others, and where the nature of the soil, the alternations of temperature, the degree of moisture and purity of the air, may I apprehend, be considered as the principal sources, from which the increased activity of the primary and essential cause, of the epidemic, or greater morbid susceptibility of the human body may be supposed to originate.

The earliest cases of the epidemic of which I could obtain any authentic information, occurred at this place, as I have already noticed, on the 5th of October. The wind on that day was south easterly, and the weather cloudy, and wet, with much thunder. It scarcely cleared up for seven days and during this period, rain fell in considerable quantity. On the 7th, the north westerly wind set in, and the epidemic after that time, increased rapidly---it received however, a decided, and considerable check from the storm that happened on the 24th, but, it very soon again encreased and raged severely, though variably (owing I think to some particular changes in the atmosphere) until the beginning of November. It then began to decline slowly, became sometime afterwards milder, and sporadic; and at length seemed gradually to disappear, as the state of the air became more dry.

The poorer classes every where appeared to suffer from its ravages more than those in better circumstances—The Mahomedans in a greater proportion than the Hindoos, and of those, the Pariah more than any other caste. But very few comparatively, were attacked amongst the half caste part of the population. Of the trades and occupations, the oilmongers, cowkeepers, and washermen, perhaps also the boatmen, seemed to be the most liable. Of the sexes, the male rather exceeded the number of females, and the old of both that of the young ; indeed, I am inclined to think, that a large proportion of cases occurred amongst such as had arrived about the middle, or at an advanced period of life, and amongst such, as were infirm and of a spare and delicate constitution.

Neither pregnant women nor infants appeared to be exempt from its attacks, but instances of the latter, were exceedingly rare. The disease, has been observed I believe, to be less violent on the sea coast, than in the interior ; and, although it may not be altogether a correct criterion, I think it nevertheless somewhat confirmatory of the remark, that the total number of deaths occasioned at Madras by the epedimic as reported to the Police Office, do not exceed fifteen hundred, a number, so small, considering the immense population, as to bear no proportion to the casualties which have been stated, to have generally occurred at inland stations.

On minute enquiry into the history of those that came under my care, I ascertained that a vast number of individuals were seized under circumstances

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of exposure at night or of a certain predisposition of body.—Many after intemperance, fatigue, or any sudden exhaustion or debility, a state, which generally from whatever cause it might have been induced, evidently seemed to render the body more susceptible of the morbid impressions.—Of this I had an opportunity of seeing several instances in individuals, who were attacked almost immediately on their arrival at Madras after a long fatiguing journey, and in many amongst the lower castes that were given to intoxication, and slept exposed to the night air. Of such persons in that situation, very few indeed, I have reason to think, escaped the disease.

By far the greater number were seized suddenly, between five and seven in the morning, or in the evening soon after sun set. But, it was not very uncommon for persons to be attacked during the day, and of those, I saw several that had fallen down on the road, and suffered from the complaint in rather an acute form. Many, I found, took ill in the morning almost immediately after eating their usual meal of cold rice, but whether this may have had any share in exciting the peculiar morbid action in the body already perhaps predisposed to its influence, or, whether it was merely the effect of accident, I have not been able to ascertain. I may state however, that I have been informed by several intelligent natives, that those who substituted a warm and more moderate meal in place of the cold at a later hour of the morning, seemed to be less liable to the attacks of the epidemic, than such as were, with this exception in regard to diet, placed apparently under similar circumstances.; how far, this may be founded in fact I cannot venture to give any opinion, it may not be unworthy perhaps of future attention, and it is with this view, that notice is here taken of a remark which I conceive still requires further experience to confirm.

It will be unnecessary for me to enter here into any regular or minute detail of the symptons and progress of the disease, as these have already been so fully and so ably described by others of considerable experience. I shall therefore only offer but a very few desultory remarks under this head. The following were the general features of the disease, and the order in which they occurred at its commencement. Retching and vomiting, preceded or accompanied by pain, sense of tightness and twisting across the epigastrium, followed by acute griping pains shooting down through the bowels, violent purging, tremblings, great prostration of strength and cramps in the lower limbs (especially in the calves) which often extended to the back, and upper extremities. The interval between the first discharge from the stomach, and that from the rectum, was usually very short, sometimes they were simultaneous.; and in those cases the cramps, I thought, were more severe. The vomiting was at first rather violent, though not in many instances of very frequent recurrence. In three or four this symptom was altogether absent, but the purging never failed to attend, and almost invariably in a severe degree. The evacuations were commonly of a pellucid white colour, and variable consistence.; very often, they had the appearance of thin boiled starch or transparent lymph.; and at other times, they were more liquid and nearly altogether free of colour.; they were always very scanty, and with scarcely a single exception they all agreed in respect to the apparent absence of bile. From some experiments to which I submitted them they appeared in general to contain much mucus. Lassitude and great loss of strength accompanied often with a nervous tremor, were early concomitant of the disease, and frequently came on suddenly and in an extreme degree. One man I had occasion to see, in whom the *prostratio virium* was so great, that he could hardly move a limb, though he had been but fifteen minutes before, apparently in perfect health, and actively employed in his usual occupation, which was that of a gardener. A sense of chilliness sometimes pervaded the body on the first attack, and now and then giddiness.; the actual temperature however, seldom suffered any material diminution for sometime, nor, did the pulsation in the extremities, with a few exceptions, cease altogether before 8 or 9 hours.

Gripes and spasms or cramps in the limbs, attended the commencement

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of the disease in almost every case, and though they were often mild and of short duration, yet, in many they occasioned great sufferings by their frequent recurrence. They usually preceded and accompanied the discharges, and their severity was marked in the robust, by retraction of the belly, agitation of the limbs, writhing of the body, sometimes a sense of constriction about the pharynx, and by a countenance and moaning peculiarly expressive of distress. In those of a more slender make, and who as I have formerly remarked, were frequently the subjects of the cases that came under my care, the disease appeared to be in a less aggravated form ; at least, as far as regards the spasms or cramps, which were so slight, that the patient would merely complain and but for a short time of griping pains in the bowels with drawings in the limbs.—Many of the old and infirm, after a few discharges, especially when they followed in close succession, sunk rapidly into a listless, cold and motionless state, in which, the powers of life appeared to be nearly suspended for several hours before death.

Fever very rarely attended the attacks of the disease, and dilirium or even confusion of thought were scarcely ever to be observed, until the disease had advanced, and considerable exhaustion had taken place —The tongue was generally moist and clean, or very slightly blanched ; and the pulse, excepting during the spasms, or after the administration of remedies, scarcely ever suffered any acceleration.—I seldom found patients complain of sense of heat in the region of the stomach in the early stage of the disease, and I think, that the subsequent occurrence of this symptom, was owing chiefly to the spirituous draughts, and other stimulants taken into the stomach.—The urine was always in very sparing quantity, or altogether suppressed —Hiccup and impaired deglutition occurred in several instances, along with a crampish pain under the sternum, darting towards the back, and very much resembling that symptom which is considered as pathognomonic in tetanus.—Though only an accidental symptom, I may also observe, that living lumbrici, some of them of a considerable size, were occasionally ejected from the stomach ; and on the recession of the disease, it was very common for them to be voided by stool after the administration of a purgative. —So common, that any purges, which I had occasion, to give, scarcely ever failed to bring away some of those vermin.

Two individuals under my care, experienced an attack of tetanus after the most urgent symptoms of the cholera had been subdued, and another had paralysis in the form of hemiplegia—these affections however, are I believe, very uncommon, particularly the latter, which in the above instance might probably have been accidental.—The disease was seldom protracted beyond twenty-four hours—to many it proved fatal within six or eight, but to the generality I think not until after twelve hours had elapsed.

All the symptoms, by which this singular, and formidable disorder is characterized, are, I am of opinion, clearly referable to spasm and its consequence. —It must be acknowledged however, that the remote cause of this morbid action, and its *modus operandi* are but very imperfectly, and indeed as yet, scarcely at all known. The wide and rapid diffusion of the disease, together with other well ascertained facts, naturally lead us to conclude, that it exists in the atmosphere ; but, in what that noxious quality consists, or whence it has originated, the want of sufficient data will not as yet enable us, I fear, to carry on conclusions much further. Reasoning from analogy, and upon the facts of which we are already in possession, I am led to think, that its origin may be found to depend chiefly on a noxious exhalation floating in the atmosphere, and which has been produced by certain natural processes that have been going on on the surface of the country, in consequence of the very considerable, unusual, and I may add, unseasonable falls of rain, that had for sometime before taken place so generally over Hindostan. The concurrence of heat and moisture, I need hardly observe, is perhaps one of the most frequent causes of disease in nature, both by its effect directly on the body under certain circumstances, and indirectly, through the medium of a contaminated atmosphere induced by the peculiar changes, which it occasions in

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vegetation, and in dead organized matter. In all countries its injurious effects, upon health have often been remarked. In Britain the Cholera Morbus though a different species from that now under consideration, is amongst other diseases, well known to be most apt to prevail after a fall of rain succeeding to a long continuance of hot dry weather. In warm and tropical countries, where the influence of such a combination must obviously be more powerful, the noxious exhalations will consequently be evolved in greater quantity, and they will also be more widely diffused through the atmosphere. Accordingly, we find that there exists a more general morbific tendency in the air of these countries, more especially in certain situations and at certain seasons.

Since my arrival in this country, I have in repeated instances, seen natives attacked suddenly when the weather was moist and the temperature variable, with a watery purging and a crampish feeling in the limbs ; and, I am informed it is not very uncommon to meet with similar cases after a heavy fall of rain in the hot season or during the periodical rain, attended with sudden depression of strength, and such other symptoms, as seem to bear some affinity, generally with those of the Cholera Spasmodica.

The insalubrious vapours then, arising from the causes abovementioned in different degrees of concentration, with their combination and modifications depending on local situation, dryness and humidity, vicissitude of temperature, and other physical changes, are perhaps more universal and lasting in their operation than is commonly imagined, and it appears to me, that aided with a certain predisposition of body, they form the chief source to which many of the diseases endemial to these climates owe their origin, and from a greater degree of virulence or under the operation of some peculiar unknown circumstances, the epidemic amongst the rest. It would require however, a more extended knowledge of the history, progress and phenomena of the disease than it has been in my power to obtain, as also the assistance of eudiometric experiments, together with full and accurate meteorological tables to enable this interesting subject to be prosecuted with any degree of success.

The general exciting cause of the disease, in whatever it may consist, has in the first instance, with very few exceptions, shewn its effect on the stomach, though, I think it not improbable, that the primary operation takes place on the skin ; and, chiefly from the circumstances already noticed, under which so many individuals were attacked.—There seems to be no reason to doubt, that *cæteris paribus* those whose bodies were least exposed to wet or to vicissitudes of temperature, were the least liable to the attacks of the epidemic, and that it was owing in a great measure, to the difference in regard to clothing and lodging, that it committed so great ravages amongst the lower and poorer, and so few comparatively, amongst the upper and richer classes.

The connection that subsists between the skin and the stomach, as well as the intestinal canal is well known, and the reciprocal influence excited on their functions from the application of various specific poisons, and from the variations of temperature with moisture, and other agents is exemplified in many, and well marked instances. But in none are the effects of this sympathy more striking, than in the sudden application of cold water to the surface of the body, when much fatigued and under a profuse perspiration ; severe griping pains, purging and sometimes nausea with a faintish feeling is the consequence only ; but more frequently, a violent spasm of the stomach is occasioned ; which unless opium or some other powerful antispasmodic, is administered, proves speedily fatal. Somewhat analagous to this appears to be the operation in the cholera, and cases have, now and then, actually occurred in this country, of a disease scarcely at all dissimilar in its symptoms to the epidemic, which were brought on by intoxication, and subsequent exposure to cold and moisture; and, at a time when there was no reason to suppose the existence of any specific virus in the atmosphere. The spasms in the epidemic almost uniformly commenced in the stomach, they seemed

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to pervade the whole of the alimentary canal; and to extend to other internal, as well as external parts. Acute transitory pains, often of a twisting and grinding nature, expulsion of the contents of the stomach, and rectum, were the attendants, and speedy consequences of these irregular contractions; their frequent recurrence, occasioned an increased secretion from the villous coat of the intestines, and these appeared to form the scanty mucous, and gelatinous looking discharges, which, I think, were rather of a bland, than irritating quality, and probably intended by nature, to protect the delicate internal surface of the bowels. It is difficult to account for the total absence of bile, in the evacuations, but, it would appear to be more owing to the prevention of its ingress into the bowels from spastic constriction of the duodenum, than to a suspension of the secretion of that fluid ; an opinion, which receives some support from the painful tightness and inward twisting so generally complained of across the upper part of the belly, and, from the circumstance of the bile, which is so often observed to burst forth, almost immediately, after the removal of the spasms. I have seen it make its appearance within eight or ten hours from the first attack, and it is not very probable therefore, unless it be from a feeble and languid state of the circulation, that the functions of its secreting vessels could have undergone any material morbid alteration, and be again restored to their healthy state in so short a period. The presence of bile sometimes, in considerable quantity, which has been found in the gall bladder after death, rather favors the supposition of the interruption to its passage from spasm in the duodenum ; for, did such a state not exist, and were the passages clear in the cystic duct and ductus communis Choledochus ; it might reasonably be expected that a flow of bile would take place from that receptacle, under the violent retchings and contractions of the stomach.

In many cases, there is, I think, some degree of general constriction throughout the intestinal tube, particularly in the duodenum and colon ; which occasions that general uneasiness and abdominal nausea, which often proves so distressing, and at the same time, interrupts the regular progression of the alimentary matter ; hence, perhaps the reason, that the first feculent stools voided after the removal or abatement of the spasms, are very frequently found in the form of compressed hard scybala ; an appearance, which though in a less degree, is sometimes also to be observed in the alvine excretions in dysentery, and after acute griping, the consequence of constipation or other causes.

The contracted state in which the bladder has been found on dissection, sufficiently shews that the morbid action is not confined to the stomach, and intestines only ; and it affords a striking instance of the permanency of the spasm ; upon which, the suppression of urine seems to depend.

The lassitude and prostration of strength, in the Cholera takes place more suddenly, and to a greater extent, than in almost any other known disease. To a certain degree, these are no doubt increased as the complaint advances, by the alvine, and cuticular discharges, but it is not easy to explain the cause of their occurrence in the early stage. From a consideration of the important nature of the parts affected with spasms, and of their nervous connections and sympathies with organs immediately subservient to life, I am rather inclined to ascribe this great depression, and exhaustion of the vital powers, to certain impressions made on the great intercostal or sympathetic nerve. So numerous and various are the well known distributions and inosculations of this nerve, first with those of the eyes and face, and subsequently with others in its descent through the thorax and abdomen, &c. that we see almost daily instances of that sympathy, which appears to exist through its medium, between the chylopoetic organs and all our mental and corporeal parts. Very simple but satisfactory illustrations are afforded of it in the healthy state, by the application of stimuli to the nose, and internal fauces, and, in the morbid state, a similar consent of parts is evinced, by the excessive languor and lassitude, sudden alterations of the countenance, dyspnœa, languid or accelerated circulation, palpitation, even

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syncope, and various nervous symptoms, which are so often observed to be the concomitants of gastric and intestinal disorder. Sometimes indeed, the effects of this sympathy are of a more serious and fatal nature, and cases are known to have occurred, when the powers of life have for a time been suspended, or altogether, and very speedily extinguished, from a blow on the region of the stomach, or from a copious draught of cold water taken under a certain state of the body. It is upon the same principle then, I would explain the great and rapid loss of strength in the Cholera, the collapsed cadaverous countenance, cold, flaccid and shrivelled skin, the deafness, impaired vision, the hollow voice, and other symptoms, which are the apparent consequences of the very feeble and languid circulation, induced by the depression of the nervous influence. The sunk state of the eyes even in the commencement of the disease is often very striking, and would appear to be owing to a spasmodic retraction of their muscles, as there is also present sometimes, a degree of constriction of the muscles of the face, with a difficulty in deglutition, and sense of stricture about the fauces.

With regard to the treatment of the Epidemic amongst the natives, I have no hesitation in saying, from personal experience, that opium alone, early, and judiciously administered, is adequate in most instances to effect a cure; and, that it is in my opinion, very seldom necessary, when application is made early, to employ any other remedies excepting it may be the warm bath* and perhaps frictions to the abdomen.—Such indeed are the virtues of this most valuable medicine, that there are, I believe, but few diseases where it supports its character as an antispasmodic, with such decided success as in the Cholera Spasmodica.

To produce that full and peculiar impression in the stomach, which by its operation on the general system, gives a speedy check to the Spasmodic action, the laudanum (which is to be preferred on account of its more speedy operation) should always be given at first in a very large dose, never less than from 80 to 100 or 120 drops, and sometimes more, to be repeated as circumstances may seem to require.—If the first dose has been administered early, its repetition in the same quantity will not often be necessary; but, as the spasms after having been apparently removed, are again apt to return, it will always be advisable perhaps to repeat at least half the quantity within two hours, and to be guided afterwards by the nature and urgency of the symptoms.

Cordials in the first stage, were only useful I think, as a vehicle for rendering the laudanum draught more grateful to the stomach; the smaller the quantity of fluid, the more speedy was the action of the opium, and the less chance of its rejection by vomiting.—This never almost proved a troublesome symptom, after the first dose had been retained, but, when it did recur, much benefit resulted from friction with laudanum on the region of the stomach. Drowsiness coming on after the first or second dose was always a favorable prognostic, and many patients after a short time fell into a tranquil sleep, from which they awoke almost entirely free of any complaint.

It was much more difficult to combat the Cholera in its more advanced stages; when the strength was much broken, and when the circulation in the extremities had ceased or become very languid.—Here, the opium was more precarious in its effects, but, it was not to be omitted altogether, though it was advisable to give it in a reduced quantity and with greater caution.—In very small doses frequently repeated, it acts as an excellent cordial, and as it operates at the same time in restraining the discharges, I think it was often in that way very beneficial.—Stimuli in this state of the system appeared to be first indicated, and I have found none answer so well as sulphuric æther,—it showed its effects in raising the pulse often very speedily, and in a surprising degree; but, being of a transitory and evanescent nature, it required to be very frequently repeated.—After a few doses of this medicine had been administered, I usually gave it in conjunction with laudanum gradually increasing the dose, but in this, I was

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* The warm bath, in the early stage particularly, is always highly beneficial.

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guided entirely by the state of the cramps and purging.—I am disposed in short, after many trials, to consider the æther, under the circumstances now mentioned, as an essential medicine in the treatment of the cholera. It has never, so far as I could perceive, done harm, but on the contrary much good, and it has sometimes succeeded, in restoring the circulation and strength, after other remedies had failed and when the powers of life had been reduced nearly to their lowest ebb.

Cordials are valuable auxiliaries, but they are generally required to be administered in moderate quantity, and with some judgment and discrimination; they may be pushed too far in some cases, and I think I have seen the free use of brandy do harm by occasioning great heat and irritation in the bowels with fever and a tendency to inflammation, &c., an effect, which, we cannot be much surprised, should sometimes take place in the hands of the native servants, from so strong a stimulus given, and repeated at short intervals and for a length of time.

Blisters, and sinapisms shewed no decided benefit. Of the two, the latter, seemed to have more effect in raising the pulse and strength.

Turpentine frictions by their soothing nature, and stimulating effect on the skin always afforded some relief of the crampish pains, and were altogether so beneficial that they should never in my opinion be omitted.

The powers ascribed to calomel, in the early stage, I am disposed to think, have been rather over-rated; latterly, I seldom gave it in conjunction with the first doses of the opium, but waited until the cramps had been removed or moderated; it then, seemed to act better in exciting the biliary discharge, an appearance which in general prognosticated a favourable issue.

It can seldom be necessary to use venesection amongst the natives on account of any inflammatory symptoms.—I have scarcely seen one instance, where that state was indicated, excepting perhaps from an access of artificial stimuli.—And with respect to its effect in restoring the circulation by removing the supposed internal congestions, my experience has been so limited that I cannot venture to give any decisive opinion. I tried it in three cases, but the result was not such as to impress me with any belief of its superior efficacy over other remedies already in my possession. I did not therefore make any further trials, particularly as the natives had so great an aversion to it; and as I was unwilling, by attempting its repetition, to encrease that prejudice which had already but too generally prevailed against the European practice. The operation of this prejudice, and the natural dislike, which the natives when sick, have at leaving their own homes, deterred many from applying to the temporary hospitals, or at least prevented them from seeking any aid there, until disappointed in that relief, which they had expected to receive from their own practitioners. The consequence of this delay was, that the generality of the cases admitted into the hospitals,* were of an unfavourable description, and the disease had commonly passed that period, when it might have been cut short by a full dose of opium. Frequently without pulse, cold and motionless, the sick seemed in the first instance, rather to require the means of resuscitation usually employed in cases of suspended animation, than the use of the narcotics and anodynes so strongly called for in the early stage of the cholera.

Before the establishment of the humane and liberal institutions now alluded to, I personally attended, as I before mentioned, a considerable number of sick at their own dwellings, and as I usually saw them and administered the opium both internally and externally along with camphor or the aromatic spirit of ammonia on the first attack, but very few cases terminated fatally. At that time, I found no difficulty in persuading the natives to use the remedies; on the contrary they were rather desirous of obtaining them, and were constantly making applications for my assistance.

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* At least into that under my charge.

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Many lives might be saved I am convinced, and much good might be done, should the epidemic ever again make its appearance at this place, by employing intelligent native practitioners, who should be required to give their attendance in different places, but instead of being stationed in any particular spot, they should be directed to go about and use every diligence in finding out and administering to the sick at the earliest possible period. The more advanced cases might be removed to the temporary receptacles, but those who would receive the remedies in the early stage might always be permitted to remain at their own homes, as they would seldom require more to be done for them, than one or two repetitions of the laudanum with the use of the warm bath, or, if such a thing could not be had, warm fomentations.

Many of the natives, I found, had laudanum and other preparations of opium in their possession, but their ignorance of the proper dose, and time for its administration precluded them the benefit which they might otherwise have derived from this invaluable medicine under the judicious directions of a qualified native practitioner. Injurious effects indeed, were not unfrequently, I believe, the consequence of its indiscriminate distribution and use amongst the natives. On one occasion, I found a poor man with a saucer containing laudanum beside him, of which he was taking a tea spoonful every quarter of an hour. It had been too frequently repeated before I saw him, for he died soon after in a comatose state, and I have no doubt, chiefly, from the effects of the laudanum. A tea spoon I find, usually contains from 150 to 200 drops—it must therefore be an uncertain and unsafe mode of measuring so active a medicine when intended for internal use, and should never on any occasion, I think, be used unless its exact contents have been previously ascertained.

I shall now conclude by offering a very few remarks on the supposed infectious nature of the Cholera Spasmodica.

No circumstances, I may first observe, have come within my knowledge, which could give any countenance to such an opinion. On the contrary, it appears to me, that almost all the facts connected with the history and progress of the disease, have been such, as to be totally irreconcilable with the principles and laws of the communication of contagion, and afford the strongest presumptive evidence, that the source of the disease is chiefly to be referred to some deleterious quality of the air, operating on certain constitutions, and states of the body. The general prevalence of the disease, or even a large proportion of individuals being attacked in some families, do not alone afford any more proof of its contagion, I conceive, than that of an intermittent fever. In both cases, the cause may be said to consist in a vitiated state of the air, and it would be nearly as unreasonable to conclude, that the former was contagious, because more than one out of many individuals living in the same house were attacked, as it would be to draw a similar inference, because many were seized out of a number of individuals residing in the vicinity of an insalubrious swamp.

Contagious diseases, appear in general, to possess such distinctive properties and characters, as must, when they prevail, in a short time remove all doubts regarding their nature.—By contact of the sick or by inhalation of the air impregnated with the effluvia arising from their bodies, they possess, it is known, the power of successively reproducing the same disease on others, and but very few of those so exposed, excepting such as are under some peculiar circumstances of exemption escape its attacks.—This property, appears to depend on a matter generated by some peculiar process of the disease, and it therefore forms an essential part of its character—its origin being in the body, it is not necessarily, so far as we yet know, affected by the quality of the surrounding air, the state of the weather or by any changes in the atmosphere.---It seems in short, to be nearly the same in all situations, and as it is kept up by passing successively through different individuals, the progress of the disease is usually slow, and marked with a degree of regularity tha trenders it not very difficult in most cases to trace the source of the infection.

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Far otherwise however, is it the case with the Cholera Spasmodica, which, without any assignable connection between its source and diffusion, appears suddenly, and violently at a station, attacks sometimes as many individuals within the first few days, as at any subsequent period, declines and increases, disappears and returns, and goes on in this rapid, irregular manner till it at length vanishes altogether, and as suddenly perhaps, as it originally came.

At Madras, but few cases I believe occurred before the 7th of October, and from all the inquiries I have been able to make on the subject, those on the north east side of Vepery seemed to have been amongst the first. After the north east wind began to blow the disease increased rapidly, and numerous single cases sprung up almost immediately and nearly simultaneously, in various scattered, and remote parts of the settlement, which could not well be referred, or traced to any source of infection, but which appeared to be quite distinct and independent of each other. The wide and speedy diffusion of the disease, its unsteadiness and the irregularity which almost every where appeared to mark its course rendered every attempt to follow it in any connected track totally unavailing. That it did not however, spread from one individual to another, may be almost inferred from the circumstance of so large a proportion of single cases occurring in the the midst of families, and of so few instances of families suffering from it in any great degree. The great mass indeed of those attacked appeared to be such as had never been exposed to any probable source of infection, while those whose duties led them to a constant, close, and unreserved intercourse with the sick, did not appear to be more liable to the disorder than others. It is well known how much and unavoidably the attendants on those affected with the cholera must have been exposed to the contagion, if it existed; particularly, in an hospital, where they must be so much occupied in administering the remedies to the sick: yet in no instance whatever, that has come to my knowledge, has any one of those, or of the relations and friends who visited or waited on the sick under my care, been attacked with the disorder.

These circumstances then, together with the universally received opinion that the high temperature of tropical countries is unfavourable to the spreading of contagion; the prevalence of the disease ultimately in a sporadic form; the influence to which it appeared to be subject from atmospheric changes, and above all, the decided check, which it received from the storm on the 24th of October, lead me at once to reject the agency of contagion in the propagation of the Cholera Spasmodica, and to ascribe its origin as already noticed, to the operation of a more general cause.

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Two cases only of the Epidemic Cholera occurred, with the detail of one of which treated by magnesia and milk, and a few desultory remarks thereupon, I shall now conclude this report.

Yersapah, a horsekeeper 28 years of age, of a spare, but healthy habit of body, was without any known cause, taken suddenly unwell this morning, between 9 and 10 o'clock. By the account he gives of his complaint, he first felt a burning sense of heat in the region of the stomach, which was soon followed by a loose discharge from his bowels, a little sharp pain at intervals across the epigastrium, nausea, and a feeling of lassitude and general uneasiness.—Notwithstanding these symptoms, he set out to lead a horse a distance of rather more than two miles; but he had not proceeded far, when the purging (which he describes to have been quite watery) encreased.—It recurred four times on the road; he became otherwise worse, and so weak, and exhausted, that it was with difficulty he reached my hospital in Black Town.—I saw him there a short time after his arrival, about noon.—His strength was then so much impaired, that he could not stand without support--His countenance had a dejected cast; the eyes a dull glistening appearance, without however, being much sunk in the orbits. The lips were pallid, and the tongue dry; the pulse was much sunk, and vibrated

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very feebly at the wrist. The extremities felt rather cool. The hands and feet cold and clammy. The temperature of the epigastrium was rather above the natural standard. He had a slight rigor upon him at times, and he complained of urgent thirst, and of slight spasmodic pains in the bowels, particularly, before voiding a stool. He had no spasms or drawings, and scarcely any pains in the limbs, nor did it appear, that he had suffered any from the commencement of the attack.

He vomited once after his arrival, I was informed, and had four small watery ejections from his bowels of a dirty white colour.

This being the first case of the epidemic which had come under my notice since the receipt of the Medical Board's circular letter dated the 7th of December, I resolved in consequence of that communication, to try the effects of magnesia and milk in subduing the complaint, previous to the use of any other internal remedy. I accordingly commenced by giving two scruples of the former mixed up in about four ounces of milk, the patient having for a short time before, being exposed to the heat of the spirituous vapour bath. The draught had not been taken more than 8 or 10 minutes, before he began to complain of great thirst, and of a return of the pains in the epigastrium, which darted downwards through the bowels; he became very restless, and in half an hour sick; part of the contents of the stomach were expelled, mixed with a minute portion of the magnesia and two or three particles of common horse gram.

He now had a drachm of magnesia given to him, in the same quantity of milk as before, and he was allowed to drink pretty freely of congee water at intervals, to allay the thirst which had rather increased. A short time afterwards, he appeared to be very restless; he looked distressed, and frequently writhed from the pains of his bowels. His sufferings were at length considerably relieved by suddenly voiding a stool. The quantity discharged was rather more than half a pint, it was perfectly watery, and abounded with mucous flocculi; some of which, on a minute inspection, appeared to have a very slight tinge of red.

At 2 P. M his skin felt warm, the pulse rather stronger, and more frequent, and the forehead was bedewed with a gentle perspiration. Took another draught of magnesia and milk, and had it again repeated after the interval of an hour. The vomiting and purging did not return but he was much troubled with the thirst; he became slightly feverish, and complained of headach about 4 o'clock. This however, was of short duration; he had a good night's rest, and after taking a little opening medicine, he felt himself pretty well the following evening, and was in the course of two days enabled to resume his usual occupation.

24th December 1820.

REMARKS.

The case now detailed, exhibits the epidemic in the mild form, under which it still occasionally makes its appearance, amongst the native inhabitants at this place.

Excepting the magnesia and milk, no other medicine was used internally, and the patient was constantly attended by myself until a decided crisis took place.

From the result of this case, and the success which, I have understood, has attended some other, and well authenticated trials of this remedy, I cannot but admit, that whatever its *modus operandi* may be, it is not without efficacy when given in the early stages of this disorder.

No acid appearing to be present, nor any having been detected in the discharges, which I have repeatedly examined, and subjected to experiment, the beneficial effects cannot be attributed to the neutralizing property of the magnesia; and as it has never, at least not in modern times, been supposed or shewn to possess any decided active virtue, unless when in combination with an acid, the secret of its efficacy like that of some other remedies, may probably be found to lie in the bland, demulcent quality of the fluid in which it is administered.

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The primary symptoms, together with the mucous flocculi which are thrown off from the bowels, shew that some peculiar acrimony exists in the primæ viæ, or at least, that there is an irritation of some kind present on their internal surface, which is first manifested in the stomach, or duodenum, and thence, propagated along the whole course of the intestinal canal.

It is these phænomena, which give the true and essential character to the disease, and lead to the most rational indications of cure.—Other symptoms arise, from sympathy, and otherwise, in the progress of the complaint, but it must ever be held a material point in practice, while we give due attention to these symptoms, to keep at the same time in view the seat of the primary morbid action.

Many errors have been committed in practice by overlooking the circumstance now adverted to, and these have in no instances perhaps been more conspicuous than with respect to the yellow, and putrid fever.—But this is a topic foreign to the subject of these remarks.

The first symptoms in the Cholera, certainly mark excitement, and I have formerly hinted at the analogy which appears to exist between the symptoms, and those produced by certain poisons, though the source, and nature of the irritation has not yet been developed.—By the urgent thirst which prevails, nature strongly points out the necessity of diluents, and I believe they will be found in almost every instance, to form an essential part of the treatment.

The mixture of magnesia and milk, seems to be well adapted for correcting and diluting acrimonious matter, and we well know, that in the treatment of the Cholera Spontanea in Europe, between which and the present epidemic, there is at least a considerable affinity, opium and plentiful dilution with farinaceous and mucilaginous drinks, are the remedies on which dependence is chiefly to be placed.

A similar mode of treatment is perhaps also the best to be adopted in the latter disorder, and I can safely affirm from personal observation, that in a vast number of cases of the epidemic, the subjects of which were natives, a single, and a full dose of laudanum early administered, or before the temperature had much diminished and the pulse began to flag, with frequent draughts of congee water, seldom, indeed almost never, failed to remove the complaint.

Spirits and other stimulants should be avoided, I think, in the early stage; they are obviously incompatible with the other remedies, and too often, I fear, counteract the sedative effects of the opium, and increase the morbid sensibility of the stomach and bowels.

In the present instance, the patient recovered under the use of magnesia and milk only, with occasional draughts of congee water; but I do not conceive, that the case had reached that point, to preclude altogether the benefit from opium; for though the pulse was low, there was still a good deal of sensibility remaining in the primæ viæ, which is always a favorable symptom.---I am not therefore prepared to say, from this solitary case that any advantage has been derived from the magnesia and milk, that would not, perhaps have been obtained from the judicious use of opium and some demulcent drink.

A certain degree of excitation in the bowels appeared to follow the first two draughts of milk and magnesia, and it will be perceived that after the discharges took place, the pulse rose, and the patient felt relieved.

The discharges from the rectum might be compared to the washings and squeezings of the villous coat of the intestines---they contained much mucus, but not a particle of bile. They partially coagulated and became of a whiter colour on the addition of diluted sulphuric acid. Some fasciculi of small lumbrici were also observed, and it is a curious fact, that these worms of various sizes, some very large, have been present, in almost every instance of the complaint, in which I have had occasion to examine the evacuations.

Asst. Surgeon Sir T. Sevestre, K. T. S. Madras, 25th December 1818.

I have the honor of submitting for your perusal some observations on the late Spasmodic Cholera, drawn more particularly from two recent cases that fell under my treatment in the hospital at Triplicane—they may have some tendency to elucidate and defend the practice of bleeding in the early stages of the epidemic which I have hitherto felt myself justifiable in treating agreeably to the general principles recommended by the Board; and although the generality of medical officers may consider the disease is spasmodic and not inflammatory, yet in the two instances I have the pleasure to subjoin, I am in reason directed to conclude, that the affection has assumed the character of enteritis without any material variation from the symptoms usually ascribed to Cholera Spasmodica.

The natives apply so seldom in the primary attack, that by the time they are under medical treatment; the diagnostics have considerably altered their early and more distinguishing features, and we have to encounter an epidemic somewhat complicated in itself, which becomes the more difficult to avert.

The two cases that form the substance of my remarks have impressed me with an idea that the epidemic is chiefly spasmodic in the beginning, but that the action and irritation of spasms in the intestines of those who are in the habit of consuming so many raw and crude vegetable substances are most likely to be supervened by slight inflammation.

The case of dissection herewith detailed, naturally led me to examine and compare enteritis phlegmonodiea, which has some corresponding similitude with the late epidemic when contrasted in the first and second stages of the disease, and I think that enteritis has not unfrequently been the original evil.

An excellent account of this latter complaint is given in the 1st volume of Edinburgh practice of Physic by Dr Fordyce---he speaks of coldness of the extremities, acute pain in the epigastric region with spasms, vomiting, and sometimes purging, quick and hurried respiration, together with sudden and great prostration of strength, pulse small and intermitting, which becomes fuller after bleeding, and the prostration of strength goes off when the inflammation is diminished; topical applications, such as blisters, leeches and fomentations are recommended, and he further mentions, if these means fail of success, opiates sometimes cure by taking off contraction, especially if joined with relaxants---he also speaks of great thirst and describes the patient bending forward and compressing the abdominal muscles which are spasmodically contracted, and from irritation he is cut off sometimes with delirium and convulsions.

I have thought it essential to support my conjectures with the above analogy, and to corroborate them by an exact and faithful illustration of morbid appearances, tho' I am not aware how many cases of dissection may have been reported to the Board that will coincide with my own evidence; in testimony of this, however, I am not endeavouring to set forth a new hypothesis, nor am I willing to acknowledge myself an entire convert to the opinion of those who have treated the epidemic as phlegmonic, and consequently used little else than the lancet, since my practice has been so far fortunate as to have reported but 40 casualties out of 200 cases of "actually seen." Indeed I had considered the measures adopted by yourself and the Board almost as *specific*, and often pronounced them as such when I had the happiness to administer the remedies in the primary attack. But I am now to report upon a case that I regard as a sort of index in the event of a recurrence of the Cholera Spasmodica.

This was the only instance that afforded me the satisfaction of examining after death, and which I did with the assistance of Mr. Conwell, when we found the intestines had been in the highest state of inflammation, not exempt from mortification, and even sphacelus.

It was this solitary case of dissection that induced me to use the lancet in a subsequent patient that applied for relief on the 11th of this month, and singular or paradoxical as it may appear in the relation, it is not the less a matter of fact, that Allima, the living instance above alluded to, was cured by me of the Spasmodic Cholera in the middle of October, with the prescribed remedies as adopted for general use—thus, does it appear that this young woman sustained two attacks of the same disease at two distinct periods of her life, and that the last time she was cured with bleeding, blisters, &c. &c. under the strict antiphlogistic plan—her case is also annexed for record.

Ass't. Surgeon Sir T. Sevestre, K. T. S., Madras, 25th December 1818.

These opposite modes of treatment will naturally excite a degree of surprise in the minds of a discerning Board, and I may be asked to expound the principles upon which Allima was cured in the primary attack in October, with stimulants, blisters, &c. &c. to which I reply (supposing her disease to have been enteritis) in the words of Dr. Fordyce—" Opiates sometimes cure by taking off contraction," and as this patient made application to me for relief in both instances immediately after she was taken ill, extensive inflammation was arrested by the application of a blister to the scrob cordis after the immersion in the medicated bath; to these important expedients some benefit may have accrued from the administration of two 15 grain doses of calomel.

The spasms which are concomitant to enteritis, if this was her complaint, was removed by opium and the warm bath, while the inflammation (as I have before said) was diminished by the operation of calomel and the external application of cantharides.—If the disease was Spasmodic Cholera in the first instance, the remedies were the more calculated to afford relief, since inflammation in most cases is a secondary symptom.

I do not mean to say that inflammation is an *invariable* attendant on this epidemic, and yet it is hardly consistent with reason to imagine the existence of strong spasms in the bowels, without some *slight* inflammation resulting either in their exterior coat, or in their mucous membranes, I should therefore consider of the two systems in question that, *that* which affords the means of resolution to be the most safe.

If I were permitted to act discretionarily, in the event of a second visitation of the epidemic, I should use the lancet in very many instances owing to the immediate relief that Allima experienced by it; independent of the glaring state of inflammation exhibited in the subject dissected, at the same time my subsequent treatment should be guided according to the degree of spasm, pyrexiæ, or other urgent symptoms; the use of opiates and stimulants in proportion to the degree of debility, or absence of inflammation should in due season be had recourse to.

Immediately after the bleeding, the patient should be placed in the vapour bath, which my experience has taught me, is far superior to the medicated warm bath, as they are not exhausted by the former, whereas only 5 minutes immersion into the latter increases the debility, though in the first instance it warms the extremities which is a matter of known importance, yet the repletion is by no means so permanent, and the coldness returns more frequently in those who use the warm bath.

In the one of steam, the patient may remain from 20 to 50 minutes, during which period the vapour is inhaled and taken into the lungs;—by this means the warmth, which is not so *topical*, gradually returns to the limbs, while it is in a manner more generally imparted to the vascular system, and I hold it essential beyond a doubt to impart heat gradually, as we are directed in cases of suspended animation. The process of resuscitation is by all who have written on the subject, recommended to be applied by degrees.

After the patient is taken out of the vapour bath, he is to be rubbed dry and bandages made to secure sinapisms to the soles of the feet, calves of the legs and inner part of the lower arms—calomel in large doses has certainly produced excellent effects and may with safety be given whether the case is inflammatory or spasmodic, Johnson has proved it a sedative when given in scruple doses;

Asst. Surgeon Sir T. Sevestre, Kt. T. S. Madras, 15th December 1818.

I have found essential relief from blisters to the scrob: cordis as also to the nape of the neck where there has been a sense of torpidity, and where the disease shews itself in a milder form. In three cases I opened the temporal artery and removed 6 or 10 oz. of blood, and in others where there has been a corresponding determination to the head, I have applied leeches with great advantage; one of these patients I remember having lost, but he came into hospital nearly two days after the attack—he had a fullness of the eyes which were red, and instead of being sunk into their sockets, they were more prominent—the rays of light were intolerable to him, he had a deep seated pain with stupor, and although he might at first have had the milder symptoms of Cholera Spasmodica (which his relations erroneously described) yet in this ill defined case I had reason to consider it rather as phrenitis than cholera.

In drawing up this report, I have been guided by no other feeling than that of public good, and if I have imperfectly expressed myself to this end, I trust that my intentions will nevertheless be viewed in the light that they are intended. I have not presumed to speak decidedly as to the existence of inflammation in all cases of cholera, many and more valuable must be the communications from others whose field of experience and scope for useful observation will be highly appreciated—My object has been to develope what was presented as worthy of remark and to substantiate phlebotomy in such cases as appear justifiable from practical analogy.

It has been always my aim to inculcate on the minds of the natives, the great advantage that might be derived by allowing anatomical investigations of such as fell victims to this epidemic, but that I should have failed in my endeavour, is a circumstance not to be wondered at, and it must be viewed as a barrier to these important researches. I cannot indeed, but consider my case of dissection to have thrown some light upon the subject, and I should have felt myself more fortunate if greater opportunities had offered for similar investigations; the result most likely would have shewn many more cases parallel with the annexed.

As it is our duty at all times to promulgate whatever is likely to contribute to the welfare of mankind, I shall take the liberty of concluding my comments by submitting to your consideration, my ideas of the probable benefit that might accrue in all cases of Cholera Spasmodica, (*unattended* with inflammation) by inhaling into the lungs, oxygen gas; it is an entire new speculation, wholly without the test of experience except however in spasmodic asthma, in which disease I have lately seen the most astonishing effects. I can vouch for its simplicity, and safely affirm that in one particular instance where a quart of oxygen gas was respired, it removed the spasm in the lungs and congestion in the large blood vessels which was evidently depicted from a cessation of pulse, coldness of extremities, and almost a total blackness of the countenance, owing to the return of blood from the head being impeded, so that the visage was often swollen and of a dark red or purple colour. This is a case scarcely requiring further description, it happened to a friend of mine at Cheltenham in 1817, who was often attacked with spasmodic asthma, and in the paroxysm that I witnessed, he was not expected to live many minutes; he obtained a pneumatic apparatus by which means he used to administer the gas to himself when he felt a recurrence of spasm.

To those who are of opinion that the epidemic in question is unattended with inflammation, I beg leave to offer for their consideration the use of oxygen air; it is of course easily obtained from manganese, and the apparatus is neither troublesome nor expensive when the gas is once supplied.

It has been remarked, that the Spasmodic Cholera has visited every station in India a second time, and in the event of its recurrence here, I should be anxious, under your sanction and approbation to give a trial to the oxygen gas in a few cases of *primary* attacks, and should the result prove so far successful as to have saved one valuable life, it may not be regarded as an innovation totally undeserving of improvement, nor considered as a speculation founded on empiricism.

Asst Surgeon Sir T. Sevestre, K T S. Madras. 25th December 1818.

Subjoined are the two cases from which my inferences have been chiefly drawn.

On the evening of the 8th December, a female, about 42 years of age, was received into my hospital in the advanced stage of Cholera Spasmodica having been taken ill nearly 36 hours previous to her admission, I saw her at 8 o'clock, which was a quarter of an hour after her arrival—one of the native practitioners had given her 15 grains of calomel with a dose of the antispasmodic mixture with hot water which they informed me, was immediately rejected from the stomach—her symptoms were, violent pain and constant spasm in the abdomen, frequent purging and vomiting of a glairy fluid, great prostration of strength, coldness of the extremities, frequent craving for cold water, pulse not to be felt at the wrist and very feeble in the brachial artery. I gave her sixty drops of laudanum, thirty of sp. ammon. aromat. in about two ounces of hot camphorated mixture, which she retained in the stomach, by this time the vapour bath was in readiness—she was placed on it and remained nearly half an hour, she took while in the bath, the camphorated volatile draught every ten minutes, in which were added 5 drops of laudanum, all this time she was very restless and still complained of great thirst and severe pain. Her extremities were now warmer and the pulse returned at the wrist. On her removal from the bath, she felt less pain, the extremities, the spine, and the epigastric region were well rubbed with strong volatile and anodyne liniment, after which a blister was applied to the abdomen and one to the nape of the neck—her feet and arms were spread over with sinapisms secured by bandages.—9 o'clock, the pain and vomiting returned, the thirst insatiable, pulse lost at the wrist, greater debility, increased coldness of the skin, which was covered with a clammy perspiration, not however so profuse or so deadly cold as in most other fatal cases—gave her hot brandy and water and the camphorated draught alternately every half hour.—10 o'clock, her symptoms were by no means alleviated, excepting in a short interval of sleep—gave her 15 drops of kaya-pootie oil with 20 of laudanum in some hot water.—11 o'clock, the coldness appeared more general throughout the system, thirst as usual, pulse sunk in the humerous, pain in the bowels *entirely* gone, had vomited once at half past ten, the looseness discontinued, objects to take any thing, voice scarcely articulate, the eyes suddenly recede into the orbits—respiration more hurried. In this state she continued until 5 o'clock the next morning, when her death was reported to me.

Appearances on Dissection.

On removing the peritonœum, we found the intestines inflamed and mortified in the highest possible manner; from the cœcum upwards, no less than four feet of the ilium was in this morbid state, the upper part of the ileum where the disease seemed to have begun was sphacelated, the kidneys were solid, but contained two small hydatids; the stomach was perfectly sound and contained nothing but the liquids she had taken when in hospital, except that it was somewhat distended with air which when let out, the stomach collapsed; some slight marks of adhesions about the peritonœum. The liver and lungs were both in a healthy state, the gall bladder filled with dark green and viscid bile—the pericardium surrounded the heart without any liquid in it.

Case of Allima.

On the 15th of October, Allima applied to me in the temporary hospital at Triplicane under the influence of Cholera Spasmodica, which was so far well formed as to have affected her with spasms of the legs and muscles of the abdomen, a slight degree of coldness in the extremities had begun, and she complained of violent pain in the epigastric region, with vomiting and purging, great prostration of strength and unusual thirst. I gave her 15 grains of calomel which was washed down with some hot brandy and water—in a few minutes afterwards, a dose of the antispasmodic mixture was given to her, and soon after was rejected from the stomach, she was put into the warm medicated bath for a short period, which relieved her pain and added strength to her pulse which was previously quick, Asst. Surgeon Sir T. Sevestre, K. T. S. Madras, 25th December 1818.

intermitting and feeble. The calomel was now repeated together with the antispasmodic mixture, a large blister was applied to the scrob. cordis, the extremities were rubbed with volatile liniment and sinapisms afterwards applied—her thirst continued, there was a cold and clammy perspiration on the skin, the purging had ceased, she retained her medicines and fell into a sound sleep for four hours. In the evening she had a recurrence of pain, less thirst and pulse evidently good, I gave her 1 grain of opium and some warm peppermint water, she passed a quiet night and in the morning was perfectly well.

On the 11th of December, Allima applied to me under the symptoms as precisely described above, and although I remembered having relieved her in October, yet from the dissection made in a subsequent case, I was resolved to take 12 oz. of blood from the arm which she assured me gave her more essential relief than the remedies that I had employed in the former attack—after bleeding she took 15 grains of calomel, had a blister applied to the abdomen, and used some hot fomentations to the parts affected. The first dose of calomel was thrown off the stomach, and it was repeated in ten minutes afterwards with 25 drops of laudanum ; she took every three hours during the night two grains of antimonial powder and was only allowed congee, tea and toast water to drink—the coldness of the extremities did not continue so long in this attack ; the last dose of calomel and the James's powders were all retained, and the thirst was not so lasting, nor the pains so distressing in this affection as it was in the former; the first night she passed with as little interruption as in the other sickness, and upon the whole she was not so much debilitated as before, she was cured in as short a space of time with this exception, that the calomel affected her mouth in a much more severe degree.

Asst Surg. J. White, Combaconum, 7th February 1819.

In reply to your letter of the ultimo, I have the honor to state that I received accounts of the Cholera Spasmodica having made its appearance in different parts of this district early in November last. About the 22d of the same month I saw some cases of it at this station and in the villages near it, from which time till the beginning of December it continued to increase and carried off great numbers—after the first week in December, (the weather having become fine,) the disease abated and continued to do so during the rest of the month. Still a number of cases occurred daily, and about the middle of January it recurred with nearly the same violence as before, and continued so for several days, since which time it has declined rapidly, and now very few cases of it occur.

With respect to the contagious nature of the disease, no circumstances of much importance have occurred to me. In compliance however with your request, I beg to mention those which seem to me to belong to that part of the subject---on the occurrence of the diseases in this neighbourhood, I had various opportunities of observing that some villages in the vicinity were affected by it, while others at no distance from them and the town of Combaconum itself remained free from it ; and when it did occur in Combaconum, I constantly observed that it raged with violence in some parts of it, while others continued for a time healthy, and that it was not in some instances till after a lapse of several days, that these latter came to suffer in their turn ; which facts seem to me to militate against the opinion of the source of the disease being in the atmosphere ; for all these places so differently affected must have been equally exposed to its influence during the same period. The circumstance also of the disease having continued to spread itself during all the variations in the state of the atmosphere which takes place from the successive change of seasons, appears to me also to tend to a similar conclusion. If a morbific state of the air is considered as the source of the disease, that air must have the power of changing the healthy air into its own diseased nature, which it appears to me there is some difficulty in admitting, but that difficulty is done away, by supposing the source of the disease to be kept up and reproduced from bodies suffering under it. From all which (notwithstanding that persons under certain circumstances may be exposed to the contagion with impunity), I am inclined to consider the disease as contagious, and that it is propagated by effluvia arising from the body, and not from a morbific condition of the air.

Asst. Surg. J. White, Combaconum, 7th February 1819.

I beg however to mention, that although in my present acquaintance with the subject, these circumstances appear to me to account in a more satisfactory manner for the phenomena of the disease than others, yet there are many appearances which I am unable to account for in a satisfactory manner, and that I submit my views on the subject with much diffidence.

Asst. Surgeon John Wyllie, Camp Nagpoor, 20th July 1818.

In absence of the Superintending Surgeon of the Division I have the honor, as Senior Medical Officer present, to forward herewith the medical returns of the different corps of the force for the month of June last—as also a general return of the sick for the same period.

Lamenting the many casualties which have occurred from the Cholera Morbus—I shall endeavour to lay before you, for the perusal of the Board, some account of that fatal epidemic as it has lately made its appearance at this station.

This disease had prevailed among the inhabitants of Nagpoor and the neighbouring villages from the middle of May—and although it had been attended with great mortality and was generally diffused among the citizens with whom our sepoys were in the habits of daily and intimate intercouse, still no cases of the disease had occurred among the troops before the 26th or 27th of May when three or four men of the Depot Corps were attacked and fell victims to it. The other troops however had yet escaped. On the 30th May the detachment which had been at the siege of Chandah returned, and reoccupied their lines near the Setabuldee Hills. Of this force besides the Bengal troops, the 1st Battalion 1st Madras N. I. the flank companies of the 2d Battalion 1st, and 1st Battalion 20th Regiments, together with the whole of the Horse and a small part of the Foot Artillery had been employed on the same campaign. Previously to our return from Chandah, notwithstanding the excessive heat of the weather and the laborious duty of the siege, we had hitherto been tolerably healthy and had not seen a single case of the genuine Cholera: one man indeed of the 1st Battalion 1st Regiment had died suddenly on the line of march while with the rear guard—I saw his body when brought into camp, from the inspection of which I concluded that he had died of a stroke of the sun,—instead of the sunken, ghastly features of one dead of Cholera, his countenance exhibited the swollen-out, bloated face of a victim of apoplexy. We had scarcely however taken possession of our lines when the Cholera like a plague fell upon the Bengal troops and followers with dreadful havock—our Madras sepoys and followers passed this day with impunity, save in one solitary instance; this was a man of the 2d Battalion 1st Regiment who had been wounded in the assault of Chandah, but was already nearly recovered of his wounds—he had scarcely arrived when he was taken ill of the disease, and I found him so bad that I considered it dangerous to remove him to his own hospital—I therefore prescribed for him, and kept him with my own Battalion sick; and next day, he being sufficiently recovered, was sent to his own lines. This was the first case of the epidemic I had seen. Although we had passed over the 30th with impunity, it was not to be so on the 31st, on the contrary this day was marked with the signs of mourning and lamentation all over the camp; the disease appeared with great violence among the troops, and of all attacked on this day, the greater proportion died—most of them becoming corpses in a few hours after being brought to the hospital; and others dying in the night or next morning—on the 1st June the number attacked was very great, but fortunately the deaths had greatly lessened; on the 2d we had not so many new cases; on the 3d and 4th they were fewer; after the 5th the number admitted has been very trifling; and although the disease still continues to shew itself, it has ceased to have the appearance of an epidemic, and only occurs sporadically.

Asst. Surgeon John Wyllie, Camp Nagpoor, 20th July 1818.

At the first breaking out of the Cholera (with the few exceptions before mentioned,) it was altogether confined to the troops and followers who had been on the campaign : after some days it likewise attacked other sepoys and persons of the force who had not stirred from Nagpoor ; but the proportion of persons of that description whom it attacked was very small, as compared with the whole number of cases, and the totals of the troops who had, and of those who had not been on the campaign. The European part of the force suffered but little---a few cases appeared in our Madras Artillery but all recovered---Three or four Bengal artillerymen however fell victims to it.

While the disease was thus raging in all its violence at Nagpoor, it was committing equal if not greater ravages in a detachment of our 1st Battalion 1st Regiment left at Hinghunghat 50 miles south of Nagpoor---with whom it began and ceased at very nearly the same periods as with us here---the inhabitants also of that place suffered in the most dreadful way from its attacks.

But before it had even appeared among the troops at Nagpoor, it had fallen upon a detachment of the 1st Battalion 20th Regiment and of the Rajah's Horse proceeding towards Ruttenpore, and which had marched from this on the 25th May. Before the 29th, the 20th detachment had lost 5 men—and many of the other part of the convoy had fallen victims to the disease—and a subsequent detachment for the same place suffered considerably from the Cholera at a period when the disease had ceased at Nagpoor.

About the middle of June, the disease appeared in a very mild way at Chandah among the Irregular Horse stationed there—three cases also occurred in the 1st Battalion 11th Regiment, of which one appears to have proved fatal—its stay however was short, and I understand it has now completely disappeared for some time.

Such is the history of the rise, progress, and termination of this epidemic as connected with the troops. In regard to its more general history among the inhabitants of the country I am but very ill informed : From what I have learned however, it would seem to have come from the north east, and to have advanced gradually in a south westerly direction, taking Nagpoor in its course and committing the most terrible ravages in its progress across the land. And it would appear to be confined to a certain tract of country ; and if so, it must be connected with a peculiar morbific poison in the atmosphere of that tract, rather than with contagion or with any general atmospherical cause*—of its connection with contagion indeed I have seen no unequivocal proof that could not be explained on other data.

The characteristic symptoms of the disease were frequent, very copious, whitish, watery evacuations by stool passed instantaneously and almost universally without griping, straining or any pain whatever in the bowels. Nausea and vomiting were, on the first appearance of the epidemic, not unfrequent symptoms, they were not however invariable ones ;—the matter rejected was either rice or colourless fluid ; there was an insatiable thirst, sudden and great prostration of strength with a sinking of all the vital powers, low weak pulse, cold clammy surface, anxious sunken features, hollow, glassy, and often bloodshot eyes. Cramps of the legs, arms and fingers were very frequent, and in a few instances the patients complained of violent spasms in the stomach, and when this symptom occurred it was often a fatal one. In one case the patient complained of violent pain in the breast ; this man however recovered.

The recovery was generally quick—but in a few of the more severe cases it was protracted to 8, 10 or 12 days, or even longer by various symptoms characterizing disordered secretions of the whole train of the digestive organs.

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* But better accounts are required of its locality and progress before that point can be settled with certainty.

Asst. Surgeon John Wyllie, Camp Nagpoor, 20th July 1818.

Three of the cases had a rather uncommon termination—one, (an old man) after having got fairly over the Cholera, was attacked with coma on the 5th day, and died in 12 hours, notwithstanding the use of leeches to the temples, a blister to the scalp, and a smart purgative. Another patient died also comatose, he was brought in from Hinghunghat in that condition, and died in 2 hours after reaching the hospital---I had no account of his preceding history. A third patient after recovering from one of the severest attacks of the Cholera, became delirious on the 2d day, run off from the hospital and committed several outrageous acts---on being brought back he had a purgative, and got his head shaved, and cold applications to the scalp, under which treatment he soon got well.

I would now proceed to say something of the mode of treatment, but I must beg leave first to say a few words on the nature of the disease of which I have been describing the symptoms and history. I am inclined to think it has been improperly called the " cholera morbus " In describing that disease, Dr. Cullen says, that * " *the matter rejected both upwards and downwards appears manifestly to consist of bile* " Now the discharges in the disease of which I have attempted the description, have not the most distant resemblance to the biliary secretion; they on the contrary are whitish, very watery, and perfectly resembling chicken broth. Again he speaks of †" *violent and very painful gripings that attend the disease.*" I have before mentioned that in a very few cases, very violent cramps of the *stomach* are complained of; but I think, that if one symptom is more characteristic than another of this species of purging and vomiting, it is the total and almost universal absence of all griping pains—the patients describe the evacuation to rush from them instantaneously, with scarcely a sense of its passage. But farther, I am inclined to believe that Sagar has described this very disease under the genus " cæliaca." The following are his words, ‡" *est albescentium " aut chyliaceanum materium per alvum frequens dejectio, plerumque profusa, cum " torminibus et prostratione virium.*" He takes no notice of vomiting as a symptom, and I have seen so many cases without it, that I do not consider its presence at all necessary to constitute the disease. His " cum torminibus" does not agree with my observation—all the other parts of his definition are strikingly descriptive.

In regard to the treatment, two indications are constantly to be kept in view. 1st, To stop the discharge—and 2d, To support the vis vitæ: and in fulfilling these I have usually given opium or laudanum in a moderate dose, and repeated them according to the necessity of the case.—In a few instances I have given these remedies to a very considerable extent, but I am inclined to think that there may be as much error, if not more in prescribing opium in very large doses, than giving it in much smaller quantities. In some cases, and particularly in those combined with much irritability of the stomach, I have found a pill of calomel of gr. vii, with opium gr. ii of admirable service. I have also used opium as a suppository and I think with advantage. While I was thus endeavouring to stop the purging, I was equally attentive in prescribing cordials to support the powers of life—and for this purpose I have usually given warm brandy and water in small repeated quantities—or I have prescribed a mixture of ammon. subcarbon. and confect. aromat. dissolved in peppermint water. As the patients all complain of insatiable thirst, and as the indulging them in drinking cold water would be of the most pernicious consequence—it is necessary, not only to forbid that potation, but to prevent the possibility of their supplying themselves, which they are sure to do, if water is within their reach. A little warm conjee only should be permitted, and that by single spoonfuls.—Should the patient have been taken ill in the morning and by evening feel better, (the purging having ceased for some hours,) I generally recommend him to use a little pepper water for his supper---all other kinds of food I forbid.

Having said thus much, I feel it necessary to add a few words of Mr. Corbyn's practice, which has been represented as so invariably curative. I am sorry to say that altho' I implicitly followed his directions on the first appearance

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* 1453. † 1454. ‡ 1419.

Asst. Surgeon John Wyllie, Camp Nagpoor, 20th July 1818.

of the epidemic, yet my trials were so unfortunate, that I was discouraged from continuing them. From what cause my failures proceeded, I will not take upon me to determine, but for certain of 12 cases treated according to his directions, not fewer than 9 of them terminated fatally. And farther, as connected with what remains to be said of the after treatment, I cannot but express my astonishment that Mr. Corbyn should find his patients so far recovered on the 2d day as to enable him to give 30 grains of jalap, as he appears invariably to have done. With my patients I have never considered it safe (unless in the most trifling cases) to give even the mildest laxative on the 2d day. On the 3d day however, I have generally given a dose of rhubarb and magnesia, or rhubarb and calomel, or oil, or sometimes jalap—and in a few instances I have considered it prudent to defer the purgative to the 4th day—in general however, I give one on the 3d, and I consider such an evacuation necessary to restore the digestive organs to their healthy state. In the great proportion of cases, a single purgative is sufficient—but in a few, it requires repetition before all becomes right—and in two or three rare instances, I have found the bowels so disordered as render it necessary to give two grains of calomel at bed time for a few nights successively, and a purgative every three or four days, for two or three times.

Before concluding these remarks, I think it proper to add, that although I have never before the late occasion seen this peculiar disease prevailing as an epidemic; yet I have at various times met with single cases of it in the most aggravated form; and I am much mistaken if I have not recorded two particular instances of it in my journal of the 1st Battalion 24th Regiment for the month of June 1814, under the names of Paramutti sepoy—and Madaramootoo sepoy.

Asst. Surgeon W. Ogilby, Camp Nagpoor, June 1818.

Rungapah Naik, Sepoy, who had been admitted on account of being affected with psora, and for which he had been using sulph. ointment, was suddenly seized on the morning of the 26th, with violent vomiting and purging, accompanied by severe spasms of the muscles of the abdomen and extremities, which in about three hours after the attack, terminated in death—25 grains of calomel and 100 drops of tincture of opium were given every half hour, and warm frictions used for the purpose of allaying the great irritability of the stomach and putting a stop to the progress of the disease, but with the exception of two or three doses, these medicines were instantly ejected, and nothing was evacuated by stool but something resembling a milky fluid. This is I believe, among the first cases that put on the appearance of Cholera Morbus among the regular troops at this station, though for a week previous to this period it had been known in the city of Nagpoor, where from fifteen to twenty natives died daily, and even before this, in several villages to the eastward-- No other cases occurred until the arrival of the force from Chandah on the 30th ultimo, when great numbers were suddenly attacked with the disease, particularly among the Bengal sepoys, of whom about thirty died in the course of the day. On the 31st, sixteen were admitted into hospital with symptoms of Cholera Morbus, and every one of these belonged to the two companies of the battalion just returned from Chandah---whether the fatigue, and exposure to the sun, and the debility subsequently induced, are, in any degree, adequate to account for the disease, having been entirely confined to those men who were exposed to these causes it is extremely difficult to decide, as these do not apply to the natives in the city, nor to many others who had been attacked in a similar manner, and who had been completely exempted from any of these causes. The variations of atmospherical temperature were very inconsiderable.

Asst. Surg. J. Kellie, Jaulnah, 7th July 1818.

Agreeable to your wish I have the pleasure of sending you a detailed pathological history of the endemic that has prevailed here since the 3d instant. The most commom succession of symptoms were diarrhœa without much pain of

Asst Surg.
J. Kellie,
Jaulnah,
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bowels, occasional vomiting, constant and urgent thirst ; extreme debility and mental dejection, deadly langour and unwillingness to be disturbed—The sensation of spasms in the limbs and sometimes at the epigastrium and back, and in some cases strong spasms occasioning convulsion of the limbs and the most distressing agony from cramps of the stomach and abdominal muscles ; to these may be added general restlessness and deafness—with these symptoms the pulse was extremely feeble and hardly (if at all) to be felt—The extremities were (more or less) cold, and the whole surface particularly the face and upper extremities bedewed with cold sweat. The arms hang motionless by the side if not convulsed ; the head dropt upon the breast, the countenance was expressive of extreme languor, the eyes sunk in the sockets, were turned upwards, and frequently appeared inflamed.---The tongue was foul, sometimes furred, but seldom parched ---The evacuations both from the stomach and bowels were watery, and light coloured, possessing no particular qualities, and little or no urine is secreted during the disease.

The sinking of the strength (or if the expression may be allowed, the exhaustion of the vital energy) appeared simultaneous with the first of the symptoms of the disease, and increased so rapidly with its continuance, that in most cases a very few hours placed the patient beyond the reach of medicine ; for even after the more violent symptoms seemed to be subdued, vitality was so far extinguished that it was no longer capable of maintaining the *functions,* on the performance of which, life more immediately depends. The respiration in consequence became irregular and laborious, the pulsation of the heart was no longer felt, and the patient soon expired, apparently from the inefficient manner in which these functions were performed. Most of the symptoms detailed occur more or less in the greater portion of cases. In some there is no diarrhœa, in others again, this is the most prominent symptom, while the stomach is but little disturbed, but the very rapid sinking of the pulse and strength, the sudden loss of the natural heat, the extreme anxiety and depression of mind, with the sensation of spasms, may be considered as the symptoms most characteristic of this malady ; which if left to itself, will most frequently run a fatal course within twenty four hours and often in a much shorter period.

The appearances on dissection throw little or no light on the nature of this disease.

The stomach and intestines, as also the omentum, appear more or less inflamed, but never to an extent to account for such sudden and severe symptoms —generally their internal surface is covered with a white viscid mucus. In some I have seen spots of extravation on the stomach and colon ; and in one, where there was extensive chronic disease ; there was a stricture at the pylorus which obstructed the passage of about ℔ iss of colourless water contained in the stomach, and close to the stricture, a bolus (of camphor, calomel and opium) was found nearly in the state in which it had been swallowed about an hour before his death. ---The transverse arch of the colon was also very much contracted, and a stricture at its right side obstructing about three or four pounds of colourless water, which was contained in this gut between its head and the commencement of the transverse arch, which dilated this part of it into a thin pellucid bag, larger than the stomach itself—The urinary bladder in every case was much contracted, and in some so much so, as almost to obliterate its cavity, when it resembled more the unimpregnated uterus, than the urinary bladder, being hard, firm and compact, its coats being condensed to $\frac{1}{3}$ inch in thickness.

The kidneys (in one case) were enlarged, flattened and flaccid—The liver, pancreas, and spleen, shewed no particular marks of disease ; the gall bladder was moderately distended with bile, and although the duodenum contained none, it could be pressed through the ducts into the gut.

There appeared a determination of blood towards the lungs, and the

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heart seemed large from the ventricles being filled with grumous blood or firm lymph formed into polypi—The vessels of the brain also seemed turgid and indicated some congestion of blood—and in one case, water was found between its membranes and in the ventricles—But these appearances might be considered rather as the effects, than as the cause, and may be accounted for by the want of circulation at the surface and its tardiness throughout the system.

Our prognosis of its terminations will in a great degree be guided by the continuance of the disease, for the delay of a few minutes will frequently prove fatal, where medicine timely administered might have afforded certain and permanent relief---when the pulse at the wrist is to be felt, and the animal heat is not much reduced, we judge favorably of the cure, and expect speedy relief of the other symptoms---but when the contrary of this is the case, whatever confidence we may place in the remedies we employ, we predict with less certainty ; and when the convulsions are strong with cold lifeless extremities, we foresee much danger, and we are led from experience to consider deafness in general, as a bad symptom.

Before stating its causes, I beg leave to advance the following facts on which my opinion regarding them is founded.

1st. Several heavy showers of rain fell about the middle of June, which considerably reduced the temperature of the air—The weather has since been cool and pleasant; the thermometer ranging from 80° to 86° seldom varying about 4° in 24 hours, and the wind has blown steadily from the S. W.—It has generally been cloudy, and the heat of the sun has never been great.

2d. The disease prevailed in Nagpoor during the month of May; and upon hearing of the march of Captain Doveton with a detachment, some of which were afflicted with the Cholera Morbus it was generally apprehended that the disease might be brought hither with it. The detachment arrived here towards the end of June; the Cholera appeared here on the 3d July.

3d. The Russell Brigade arrived here on the 4th and left this on the 5th without a symptom of the disease, which broke out with great mortality among them a few days after---and Messrs. Palmer arrived here on the 4th and marched on the 6th without sickness; before they arrived at Aurungabad, many of their party were taken ill and the disease was introduced into Aurungabad shortly after their arrival.

4th. The first case I heard of at Jaulnah, was the death of a woman of the sepoys families encamped in Cawderabad---and the first I saw, her son, a boy of four years old who had been constantly with her during her illness, and had been taken ill with similar symptoms shortly after her death---and died in a few hours after. From this period the disease spread rapidly as from a focus, among the families and inhabitants of Cawderabad, and on the following day appeared among the troops and their bazars.

5th.—Cawderabad is situated to the rear and towards the right of the lines, the disease raged most violently about the right, centre and bazars—the streets of which stretch up to the gates of Cawderabad.

6th.---The Royals are immediately in front of the general bazars, with which they have constant communication ; they suffered much from the disease.

7th.---The Horse Artillery are a considerable way in front, have less direct communication with the general bazar, and little intercourse with the Royals—They suffered comparatively very little—One of two cases however was carried up from the Royal lines where the endemic then raged.

8th.---A mother is taken ill, and is assiduously attended by her daughter—the mother recovers, and the daughter is taken ill and with difficulty escapes death ---Two children are discovered in the bazar under a cumley (or blanket) whose mother had died of the disease twelve hours before---The elder

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about 3 years old, was recovering by medicine that had been administered to him, but he was hugging his young brother (a baby of 10 or 12 months old) who had been clinging to the breast of his expiring parent but a few hours before, and was now gasping his last.---Instances of this kind were numerous.

9th.---Of the European patients in Field Hospital for other complaints, 3 were attacked with Cholera after the reception of Cholera patients, and of these, *two*, one on each side of the ward, were at the end nearest that appropriated for the reception of Cholera patients.

10th.---Orderly sepoys attending on the sick so afflicted, are so frequently attacked with the disease, that it is often with difficulty, their attendance can be enforced.

11th.---When it appeared in a family, generally several were attacked with it.

To these facts I have been an eye witness ; and from them I infer, that the disease has existed here as an endemic ; that it is occasioned by a *specific* morbid poison, SUI GENERIS—that this poison is formed by the disease itself, and that the disease in consequence is communicated by contagion from one person affected with it to another.

This poison I conceive to be conveyed through the medium of the air respired ; and its immediate operation to be on the *sensorium commune* or nervous system.

The nervous energy is diminished in proportion to the activity of the poison and predisposition of the sensorium.—The muscular action becomes weak or inordinate in proportion to such diminution. All the active or supporting muscles fall of course into a state of relaxation. The patient is no longer able to support himself, the legs give way under him, the arms dangle uselessly by his side, the head rests on the breast or shoulder, the ball of the eye is turned upwards by its own weight on the elevating pully of the levator oculi—the heart fails in its action and is hardly known to palpitate. The respiration becomes slow and laborious. The extreme secreting vessels no longer capable of their healthy contractile power—pour out a serous fluid into their cavities or outlets, and there are clammy sweats, and secretion of serum into the stomach and intestines, instead of salutary perspiration and the healthy secretion of the stomach and bowels. In fact, all healthy actions in a manner cease, there is no secretion of bile, none of urine, none perhaps of healthy saliva, for the thirst is urgent, though the tongue be moist. The only secretion is that of debility, and it is poured out by the extreme vessels into those places where there is least resistance, and this morbid secretion from the stomach, from the intestines, and from the skin may be of one and the same nature, the serum of the blood more or less tainted by the surface over which it has more immediately passed—even the smallest muscles become in this way relaxed ; the tympanum of the ear no longer stretched by the small bones which press upon its centre by the action of their respective muscles, becomes relaxed, and causes deafness---as to the contraction of the bladder to an unusual small size that must be expected ; It is a muscular bag with great contractile power and must always be nearly full, whether it contains four drops or four pounds---if there be no secretion of urine by the kidneys, it must contract to the limits of its muscular power of contraction, and beyond this, it will be pressed together by the circumjacent intestines.---" Nature," said the old philosophers, " abhors a vacuum," and the bladder has no flatus like the stomach or intestines to support it from the most perfect collapse, its sides must therefore come into contact when it contains no fluid.

I have said that the effects will be in proportion not only of the activity of the morbid poison, but also of the predisposition, but of what nature this predisposition is I am ignorant, perhaps it will frequently be found, (as with other

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diseases) in the peculiar organization of the body, singularity of habit or some sudden imperceptible change in the system.

As the European is of more robust habit than the Native of India, the spasms and more violent symptoms are with him more frequent and severe; and the consequent collapse, amounting frequently to perfect coma, is greater and more deadly in proportion; with him also the appearances of inflammation and determination of blood to the internal parts are more manifest; his previous mode of living and perhaps the very state he had been in at the time of the attack, may give a more inflammatory tendency to this disease with the European soldier than with the comparatively low dieted sepoy; and with the former the Cholera Morbus I have described, is generally more violent in its progress, and more fatal in its termination than with the latter; again it is more fatal with males than with females, excepting with such as are well advanced in years, with whom it most frequently proves mortal; young children also seem to bear it badly and often fall a sacrifice to it in a few hours.

The mode of treatment on which the greatest reliance has been placed, and adopted here with some success is that recommended by Mr. Corbyn---but to ensure that success, the remedies must be exhibited at the very commencement of the attack, and other auxiliaries will often with great benefit be called in. A scruple of calomel is given immediately to the patient, and is washed down with an ounce of strong peppermint water, with, from 60 to 100 drops of laudanum or upwards---and this must be repeated every one, two, or three hours, de rê natâ. In the meanwhile the body should be kept covered with warm clothing, and bags of heated salt, or bottles of hot water will be applied to the extremities, epigastrium, and region of the heart. Should there be cramps and spasms, the patient should be put into the hot bath as soon as possible, the temperature of which should be about 120, and in this, he ought to be kept from 10 to 15 minutes; he should then be carefully dried and covered up, and some warm cordial drink should be given occasionally as the stomach can bear---should the spasms continue, the limbs should be assiduously chafed and rubbed with some strong opiate liniment, and when there is irritability of stomach* or uneasiness about the præcordia, a large blister should be applied to the epigastrium without delay. The loss of pulse, cold extremities and clammy sweats, generally preclude the use of the lancet; but when the pulse can bear it, venesection at the commencement would be employed with Europeans particularly, I have no doubt with the greatest benefit, not so much with a view of preventing or removing inflammatory action, as of relieving the circulating system by withdrawing a proportion of the fluids to be conveyed by it—and it has in repeated instances been so employed here, with the desired good consequences, the pulse rising under the lancet, and the disease yielding to the other remedies more speedily and perfectly. The signs indicating the favorable operation of the remedies are, the restoration of heat from the centre to the extremities, the absence of cold sweats, the returning of the pulse to the wrist, the cessation of the vomiting and purging, the less languid appearance of the countenance, and greater vivacity of the eye; we hail these appearances as happy omens and assist nature by means of cordials freely administered in subduing the disease, and restoring the almost suspended vital functions; after which all is safe, and our views are now directed only to recruit the strength and maintain a regular state of the bowels---But till such time as these favorable symptoms make their appearance we persevere in one line of practice, and if more volatile stimuli be thought necessary we add camphor or musk to the calomel, &c. placing some reliance even in the most desperate cases, in the remedies we employ, knowing that their first action must be on the disease, which if not destroyed will in a very short time terminate in the death of our patient—relapses and 2d attacks sometimes occur, but are not very common.

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* When the irritability of stomach is very great, it frequently appears that the medicine in this form cannot be retained, when the calomel is given about ten minutes before the laudanum causes both to remain; and oil of turpentine with cantharides rubbed into the epigastrium, as suggested by my friend Mr. Macdowall, expedites the effects of the blister.

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Such is the individual treatment that has been found most effectual, and where it is carefully followed about 9 out of 10 will recover by it, of whom I imagine nearly the same proportion would terimnate fatally were the disease left to itself: But if the facts mentioned be not mere coincidencies, and my inferences from them just, more may be done by the police, military and civil, both in the way of prophylaxis and cure—In the first place, hospitals should be formed in airy situations for the reception of all patients affected with the disease; and these should be furnished with constant medical attendants and servants, with medicines ready prepared, and every comfort provided for the sick, that circumstances will admit of—Hot water and conjee should be held in readiness, tubs prepared for the hot bath, that not a moment may be lost in prescribing the necessary remedies.

2d.—There ought to be as little intercourse as possible between the healthy and diseased, and communications between those places where the disease rages and where it is less prevalent should be prevented. Troops so affected ought not to be allowed to enter military stations, till the disease had disappeared; and those not affected should not approach places where it prevails.

3d.—Those who have not reported sick should be examined as often as possible, and sent to the hospital on the first symptom of the disease which may be considered by the patient at first only as a looseness, weakness of stomach or nervous debility—The pulse will generally be the criterion, by which we judge of its being of a more serious nature—and where this is found small and thready, he should be immediately carried to the hospital—This will be more particularly the office of the cutwall and peons in the bazars, and of the commissioned and non-commissioned officers among the troops, who ought also to use their influence and exertions among the families to discover the affected, and have them duly administered to—They should be particularly attentive in examining the state of the men, coming on and going off duty—All this I am convinced can be done without much inconvenience or interruption to social order, and has been enforced here to a certain extent; which, no doubt, has contributed both to the cure and prevention of the disease.

The following are the D. O. issued by the Brigadier General on this important point, who has excited the alacrity of all by his humane exertions and personal example.

7th July 1818.

A. O. As the Cholera Morbus is now raging with uncommon violence in the pettah of Cawderabad---the Brigadier General requests, that Commanding Officers of Corps, &c. will be so good as to recommend to their men to discontinue their communication with that place as much as possible during the prevalence of the disorder.

12th July 1818.

A. O. It having been remarked that the men who are either come off or are on duty, are most frequently those who are attacked by the Cholera Morbus--- The Brigadier General requests that such men may be as little exposed as possible while on duty, and that they should be instructed invariably to wear their watch cloaks during the night

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Supg. Surgeon W. Peyton, Camp Jaulnah, 12th July 1818.

I have the honor to report to you, that the Cholera Morbus has reached us at this station, it first made its appearance among the families of the sepoys who live in a patcheree in the pettah on the 3d instant, on the 4th it commenced with the troops, and it encreased so fast in the hospitals, that on the 7th one general hospital was established for the cases in the native troops. The Europeans were

Supg. Surgeon W. Peyton, Camp Jaulnah, 12th July 1818.

left with their own Surgeons; the Royals I am sorry to state, suffered very severely from the disease; in them, the symptoms were very severe, particularly the cramp in the legs, and arms. The symptoms in general were such, as described by Mr. Corbyn. The spasms in the Natives were scarcely observable, although they complained much of them; Mr. Corbyn's plan of treatment was chiefly found to be successful when the patients reported themselves in time, that is, within 5 or 6 hours, after which period, the pulse is not to be found in the wrist, the extremities become cold, and the prostration of strength is complete, and death ensues very soon.

The disease generally commences with a purging and vomiting of watery stuff not at all severe, which is the cause that the person attacked, is under no apprehension, until his strength fails him, and consequently neglects to apply for medical aid until it is too late—and the pulse at the wrist sinks, when the spasms become severe and attack the abdominal muscles, the extremities cold, and covered with a clamy sweat, the eyes are dull and heavy, occasionally insensible to the stimulus of light, and covered with a thick tenacious film, breathing becomes oppressed, and death generally follows from 10 to 24 hours after the first attack. In the treatment we only deviated from Mr. Corbyn's plan in giving larger doses of laudanum, the cases being more severe than he describes them; from 60 to 150 drops have been given in a dose, with a scruple of calomel, and repeated in 20 minutes, until it took effect in quieting the spasms; my directions being not to attend to the quantity given, but to the effects of it. Thus, from 400 to 500 drops have been given in 4 or 5 hours with effect. The disease begins now to give way a little; during the last two days the admissions have not been so numerous, particularly in the Royals, who admitted only one man since 6 o'clock yesterday morning to this time 1 o'clock P. M.—Observing that the troop of Horse Artillery here remained comparatively free from the disease, having had only two men attacked with it, which I could only attribute to their living in tents, and the Royals in old and uncomfortable barracks, I got them removed to their tents, and the day they moved into them, the disease seemed to slacken, as the admissions were not $\frac{1}{3}$ of what they were the day before, and have since continued to diminish, and I hope but very few more will be attacked by the disease. The weather since the arrival of the force at this place, has been very pleasant, that is, cloudy and cool. The thermometer at noon, has not averaged above 88, and not varied above 4 degrees in 24 hours; there were some showers of rain, but the clouds have been until these two days past, low and threatening rain; we now have more sunshine, although the thermometer is only 87 at 2 o'clock. My opinion of the disease is, that there exists some noxious quality in the atmosphere, which affects the nerves in such a manner, as to cause spasms; that these spasms are communicated to the arteries, and impede the circulation, at first in the extremities, and thence through the whole course, which causes death; for from the inspection of the body there is no morbid appearance discernible, which could account for so fatal a termination in so short a time. Several bodies were carefully inspected, but the only unusual appearances were slight inflammation, and determination of blood to the stomach, intestinal canal, and the other abdominal viscera, and even to the brain itself. In most the bladder, as remarked by Doctor Davis, was much contracted; but no cause of sudden death could be discovered in any, which I am therefore led to refer to a nervous affection, and this by experience was found to be most effectually remedied by the plan of treatment to which I have already alluded.

For want of time I am prevented from giving a more circumstantial account of this disease, but hope in a few days by the subsiding of this direful complaint to be more at leisure to lay before the Board a fuller and more satisfactory history of it. I am sorry to add that we lost one officer, and the only one who has been attacked by the disease, Lieutenant and Adjutant Macglashan of the 16th Light Infantry—Relapses have been frequent after the patient was supposed to be out of danger.

Asst. Surg. J. Kellie, Jaulnah, 7th October 1818.

In observing the further progress of this dreadful malady, I am still more convinced, in my own opinion, of its contagious nature. Does not the strikingly characteristic symptoms, the uniform rapidity of the disease argue to conviction, the operation of a peculiar morbid poison? How then is this poison produced? Is it generated in the place, or is it brought into it? If generated, and not contagious, its operation will be confined within certain limits to that place, as it my be diffused and dissipated through the atmosphere; when it may indeed for a time float upon a gale, accompany the seasons, or be somehow connected with the meteorological changes; but it has observed none of these, it is has been carried in the very face of the wind from village to village, from one military station to another, and in the very route of troops; from Nagpoor to Jaulnah, from Jaulnah to Arungabad and Malegaum, from Arungabad to Seroor, and from that to Bombay; it has progressively visited the different villages between this and Hyderabad, at which place two officers have lately fallen a sacrifice to it.

Of these I understand, one had constantly attended the death-bed of the other, and he himself was a corpse, within 48 hours after. And is not this contagion? Or shall we still be answered by the puerile question, if it be indeed contagious, why are not all equally liable to it, and why are not the medical attendants themselves attacked? This knot is scarcely worth untying, we may cut it at once; we are all liable to it, and attacked whenever exposed to the poison sufficiently strong to act on our constitutions, which may be prepared by various and imperceptible predisposing causes. Why does vaccination so often fail, and how did the world escape the plague?

Asst. Surgeon A. Campbell, M. D. Jaulnah, 1818.

Only three cases of the epidemic, misnamed the Cholera, occurred amongst the Europeans of the Horse Artillery. In the first case the patient, William Walker, did not apply for assistance, until some hours had elapsed from the commencement of the vomiting and purging; when brought to the hospital, the pulse could not be felt at the wrist, or temples. The extremities were cold and damp---the fingers and toes shrivelled as if long soaked in water. Painful spasmodic contractions of the muscles in the extremities and pariétés of the abdomen---great anxiety and restlessness. The eyes sunk deep in their orbits, the pupils dilated and fixed, and the eyelids of a purple hue---the stools were passed involuntarily, and similar in appearance to milk and water.

Calomel and laudanum as recommended by Mr. Corbyn; the hot bath; frictions both in the bath and out of it; stimulants internally and externally, were all employed as directed---but without success, and he died in seven hours after his admission.

In the second case, I was called to the patient, John Armstrong, before his limbs were quite cold—he had only vomited once or twice, he had strong spasms in his arms, legs and abdominal muscles, great oppression at the precordia, severe burning heat in the abdomen, intolerable thirst, restlessness, the pulse at the wrist very indistinct, the eyes sinking, and the countenance expressive of great anxiety.

Twenty grains of calomel with eighty drops of tincture of opium and fifteen of peppermint were given to him, but ejected almost as soon as swallowed—venesection was immediately had recourse to, and whilst the blood was flowing his belly and limbs were rubbed with bags containing hot salt; when about forty ounces had been abstracted, the spasms and oppression at the precordia subsided. The pulse rose sensibly under the finger, and he expressed himself as feeling easy—another dose of the calomel and laudanum was then given, and retained—he was covered up and had weak warm negus, and ginger tea to drink—he continued restless for a short time, but at length, lay perfectly quiet, breathed easily and perspired freely—eight hours after this a strong dose of jalap and a purgative enema were exhibited—he recovered.

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In the third case my notice was early attracted by the peculiar appearance of the countenance and eyes, so generally remarked in this disease. The patient had been violently purged and vomited, several hours before he applied for assistance. He complained of acute pain at the scrobiculus cordis, and in the right hypochondrium. Intolerable burning heat in the belly, and a difficulty of breathing—the pulse at the wrist almost imperceptible, and he had spasmodic twitchings in his legs and arms.

He was immediately bled, and the blood allowed to flow until the pain in the epigastrium and the dyspnœa subsided, and the pulse at the wrist could be felt distinctly—a dose of calomel and tincture of opium was then exhibited, and a large blister applied to the surface of the abdomen—he was covered up, and allowed to drink warm ginger tea in small quantities—he lay quiet for some time, but the restlessness again recurring after the lapse of about three hours, the calomel and laudanum were repeated—he slept for some time, and on awaking took a large dose of the oleum recini.

My attention was directed, in conjunction with Mr. Stoddart the medical officer of the detachment of His Majesty's Royal Scots, in the course of my attendance at the hospital of that detachment to assist Mr. Stoddart, to the abstraction of blood as the principal remedy to be depended on in this disease.

In the first few days we lost an alarming proportion of cases, in none of which, the method of treatment we had been prepared to expect would succeed, seemed to produce any effect: and having observed in those who died, the spasms to have been particularly violent—the pain in some one or other of the abdominal viscera very acute, an appearance of determination to the brain, the sclerotic vessels turgid, an intolerable burning heat felt in the abdomen, anxiety and great oppression at the heart, of which latter symptoms and the intolerable thirst the patients often complained much—and having on dissection found the appearances to coincide with, and account for those symptoms satisfactorily, we agreed on the propriety of abandoning the stimulants, and on the necessity of free blood letting, as the best means of restoring the balance of the circulation, and obviating the inflammation, consequent on the accumulation of the whole circulating mass in the internal parts of the body.

We found the appearances on the dissection of twelve bodies, invariably the same, differing only in degree, viz. congestion in the large vessels of the abdomen, thorax and head, spots of inflammation on the stomach, intestines and omentum, the vessels of the mesentary and omentum appearing in some cases as if they had been injected, frequent slight adhesions of the intestinal folds to each other and to the peritonæum, the lungs inflamed, and adhering to the pleura. In all the bodies the inner surface of the pericardium was found inflamed, the coronary vessels extremely turgid, and the liquor pericardii totally wanting. The gall bladder distended with dark coloured viscid bile, and the ductus communis so constricted, that it required strong pressure to force the bile into the duodenum. In two cases we found firm blood coagula in the lateral ventricles of the brain, and in one, strong adhesion of the dura mater to the surface of the brain.

As few of the cases occurred, in my own hospital, I have merely given a slight general view of the circumstances which induced Mr. Stoddart and myself to depart from the method of practice recommended, and to attempt as the chief indications of cure, to restore the balance of the circulation by relieving the heart and large blood vessels from the load which oppressed them, in consequence of the repulsion of blood from the surface, and to remove the visceral inflammation and the spasms, caused by the internal accumulation.

These indications were answered by blood-letting, medicines to determine to the skin and internal canal, and frictions to excite the torpid vessels of the surface—blisters wherever any local affection seemed most prominent.

In no case has the venesection ever disappointed our expectations, except in extreme cases, where the disease had made such progress that blood would not flow, even from the temporal arteries and jugular veins; and in those cases none of the other modes of treatment had any effect.

Asst. Surgeon A. Campbell, M. D. Jaulnah, 1818.

That this disease is not infectious, but is caused by the direct application to the surface, of a peculiar miasma existing in particular strata of the atmosphere has been fully proved by the history of its progress, as well as by the phœnomena attending it Had it been infectious at this station, the Horse Artillery could not have escaped with so few cases, situated as they were, in constant communication with the Royals, and the bazars of the force—Neither had it been infectious in its nature, could the medical officers and the numerous attendants on the sick who must have been particularly exposed to infection have escaped its ravages.

The exemption of the Horse Artillery I attribute, to the excellent precautionary measures adopted by the Officer Commanding to defend the men from exposure to the cold, damp, strong westerly wind which continued blowing during the whole period; to the regularity observed in the messing of the men; and to the steadiness of the men themselves in avoiding intoxication.

The symptoms of this complaint under which it first made its appearance in the detachment under the command of Lieutenant Colonel Heath, correspond in most respects with those mentioned by Mr. Corbyn, in his letter of the 26th November 1817.

Asst. Surgeon A. Shedden, Camp Nussurabad, July 1818.

There is evidently in this complaint a general and most unaccountable derangement of the whole arterial system; even the pulsation of the larger arteries of the body, for instance the femoral artery in the inside of the upper part of the thigh is not to be felt, and the circulation of the blood during the period the patient continues in this state, is evidently confined alone to the organs essential to the continuance of life.

In several cases which at first came under my care, the patient sunk into the cold stage of the complaint, and the pulsation of the arteries ceased in the course of half an hour after the first symptom had made its appearance, accompanied with all the other symptoms given to us by Mr. Corbyn, with the exception of vomiting, the evacuation being wholly by stool, consisting of water only and very copious.

The treatment recommended by the abovementioned medical officer and which proved so singularly successful with him, was in many of these cases had recourse to immediately on the patient's being brought to the hospital, but I actually did not save a single patient by the use of it alone, for when no other additional treatment was employed, the case invariably turned out fatal in the course of a very few hours. Having had the misfortune to experience the inefficacy of this practice in more instances than one, although fomentations, the warm bath, friction with stimulants, and other remedies recommended in the cold stage were also employed, I was induced to try some more powerful means to create warmth, to increase the action of the heart, and to restore if possible the circulation of the blood in general. I accordingly used stimulants both internally and externally, as an internal stimulant I found none equal to a liberal use of brandy and water in equal quantities, given as hot as the patient could drink it, and improved with plenty of spices, such as cinnamon, cloves, cardamoms, ginger, &c. This I gave to my patients every quarter of an hour, half hour, or hour, in the quantity of half an ounce, or an ounce at a time according to the nature of the case and the urgency of the symptom present, which induced me to have recourse to this practice.

As external stimulants I used hot arrack or a solution of salt in boiling water which I applied with flannel, and kept attendants constantly employed in rubbing the extremities and body of the patient with it; this I found could not be

Asst. Surgeon A. Shedden, Camp Nussurabad, July 1818.

continued too long, or that it could be accompanied with too much friction, the patients themselves expressed a wish for it, and it evidently had a fine effect in checking spasms which occasionally attacked the extremities.

By this treatment, I am certain I saved the lives of several patients who could not possibly have survived otherwise three hours at most. I beg also to state that from four, six, to eight grains of the pulvis antimonialis combined with occasional doses of calomel in the quantities of eight, ten, or fifteen grains appeared in several instances in which I had recourse to it to assist greatly in restoring warmth, and promoting a more natural moisture on the surface of the body, but more particularly about the neck, and breast, when the patient was suffering from cramp in the extremities, this treatment was evidently of the greatest service in removing the spasms, and in changing the condition of the patient from a state of misery to one of comparative ease. The hot bath when it could be employed was also of much use, and I am certain that could my patients have been accommodated with a ward of an hospital instead of a tent, through which there is a constant current of cold air, I should have found my practice more successful than it has, I am sorry to say, proved to be.

On the morning of the 28th July, this disorder assumed a very deadly character indeed, five sepoys of the 1st Battalion 7th Regiment N. I having been suddenly seized with a copious watery purging, unaccompanied by vomiting, were carried to the hospital immediately this symptom made its appearance; when I saw these men, which was within ten minutes from the time they had been attacked, their pulse was not to be felt, their skin cold, with a clammy moisture over it, their eyes sunk, and in short reduced to the most helpless state in the course of that short period ; six other natives belonging to the bazars and two servants, were seized with the same melancholy symptoms on the same morning, and all, together with the five sepoys fell a sacrifice to this dreadful visit of the disorder in the space of from one to twelve hours from the time they had first complained of being unwell ; two villagers died in the same way, on the same morning, making in all fifteen deaths in one morning, the total attacked with the disorder on that day.

As an instance of the unwarned and sudden manner with which a person is seized with this complaint, and reduced at once from a state of health to one of the most pitiful and helpless nature, a lascar in the service of an officer was on the morning above alluded to, in the act of packing up his rice previous to going out to cut grass, seized most unexpectedly with the symptoms I have mentioned, close to his master's tent, and being unable to call out for assistance, he was observed by another person at a short distance from him to be picking up small stones, and pitching them towards him for the purpose of attracting his notice; this man died in an hour or two afterwards.

Until some more powerful remedies than any hitherto recommended, or until the cause and true nature of this complaint are known, I consider the situation of every unfortunate wretch attacked in this way, to be a most hopeless one.

In no one case which has come under my care, have I experienced any remarkable benefit from the practice so singularly successful in Bengal. The tincture of opium and calomel certainly checked the inclination to vomit when this symptom existed, but then I was under the necessity of repeating the dose, over and over again, and to increase the quantity of the tincture of opium to 100 and 200 drops, but this alone in no one instance saved the patient, he gradually became colder and colder, the pulse stopped, the eyes sunk into their sockets, and became fixed, and if no stimulants were had recourse to, the case invariably turned out fatal in the course of a few hours.

From what I have seen of this complaint, there appears to be a total want of the secretion of bile, if its first symptom is vomiting, this generally takes

Asst. Surgeon A. Shedden, Camp Nusurabad, July 1818.

place while the person is taking his rice or immediately afterwards, whatever the contents of his stomach may be, it is thrown off totally undigested, and is neither mixed with nor followed by any vomiting of bile. This is also the case with the evacuations by stool, the first motion, which is frequently involuntary, consists of undigested rice, &c. accompanied with a copious discharge of water without the slightest tinge or appearance of bile, being mixed with it. In my opinion the complaint is more of a diarrhœa than Cholera Morbus.

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There being much reason to believe that the epidemic disease which had made such extensive ravages in different parts of India would make its appearance in this camp, every means were taken that could be devised to assist those who might be afflicted by it—Many families of sepoys, &c. on their road from Jaulnah to this camp, died of the disease, and those who arrived were the first who suffered. No case appeared, even of a suspicious nature, until the 13th July. On the morning of the following day I heard by accident of a Chuckler of the 13th N. I. having died that morning of vomiting and purging—Upon enquiry from the native dresser it appeared this man had been taken with vomiting the preceding evening and had vomited three or four times—He was much purged during the night, and complained of violent pains about his abdomen ; at day light the dresser was sent for, but the man was dead before he arrived. Whilst learning the history of this man I was informed that a native woman of the Artillery was then labouring under the disease---I immediately went to the hut, but she had that instant expired.---This woman had but very recently arrived from Jaulnah, and her friends who accompanied her described the disease which caused her death to be of the same description as that which had been so fatal at Jaulnah.

Although neither of these cases were seen by Medical Officers, I had no doubt but they were the very identical epidemic.

On the evening of the 15th the friends of a bazar man came and reported a man ill with vomiting and purging---He had been ill since twelve o'clock, had vomited several times, and been frequently purged---He had some spasms in his lower extremities, countenance collapsed---eyes sunk and nearly fixed---skin cold but not covered with a clammy sweat---pulse not to be felt at the wrist.

℞ Calomel grs. xv. was placed on his tongue and washed down with
℞ Tinct. opii. gtts. xxxx.
Ol. Menth. gtts xx.
Aquæ Fort. ℥ ii m. was immediately administered, and in half an hour he expressed himself relieved. It was recommended to his friends that he should be brought near the hospital of the M. E. R. as regular attendance could then be given to him---An hour and an half after the first dose of medicine had been given, it was repeated, spirits and water with a few drops of tinct. opii. were given him in the interval---soon after the pulse at the wrist became perceptible---He was given during the night spirits and water at short intervals and in small quantities---This man recovered and went to his village about 3 days after.

At ½ past 5 a. m. of the 16th, Corporal Jones of the M. E. R. was brought to the hospital with every symptom of the epidemic---He had been 12 years in India---and was not generally a hard drinker.

From his own account it appeared that he had gone a short way to the front of the line to get some water from a Nullah about 9 p. m., that whilst there a sudden cramp had seized his lower extremities which rendered him unable to move, and that he had lain all night exposed, vomiting, and purging—his skin was cold and clammy—pulse extremely feeble and irregular ; countenance much altered and collapsed—eyes sunk, great thirst. He was writhing with pain from the spasms of his lower extremities, and muscles of his abdomen, and the recti abdominis muscles were drawn up into balls, and his fingers and toes exhibited all the appearance of cramp.

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℞ Calomel ℈ i.
Tinct. opii gtts. cxx.
Ol. menthæ ppt. gtts. xx.
Aquæ fort. ℥ ii. were given, the calomel being placed on his tongue and washed down with the draught. The medicine remained on his stomach—the extremities were well rubbed with spt. camphoratus; in an hour the medicine was repeated, his pulse had now become lost, and his skin covered with a profuse clammy sweat. The calls for cold water were constant, and he complained of burning heat in his stomach; strong warm brandy and water with spt. æther. vitriolici and tinct. opii were given on the spasms occasionally becoming very distressing; the diaphragm appeared to be much affected and he complained of pungent shooting pains across his chest, which caused his breathing to be very painful; a blister was applied to the epigastric region, every stimulant that could be thought of was given, and all retained on his stomach. He died at ½ past 12 o'clock P. M The body was opened at 3 P. M. about 2½ hours after his death.—The heart and lungs were sound and free from disease. The stomach healthy, and containing much fluid; no inflammation on its internal surface, slight fulness of the vessels of the small intestines and mesentery, spleen of rather a large size, and turged with blood, liver sound, gall bladder nearly full of healthy bile. He had no stools in hospital from the time of his admission.

I was induced to believe in this case, that my want of success originated in the man being brought at so late a period of the disease, and it also on investigation came out, that his story to me had not been correct, but that he had been drunk the preceding evening, and had in that state been exposed all night; a smart shower of rain fell during the night.

At 8 P. M. of the 17th, Private Walker walked to the hospital with the orderly corporal. He had been at roll call in the evening, and was suddenly seized with vomiting and purging, his skin was damp and cold, a small, weak, fluttering pulse, pain at the epigastric region, countenance much altered, eyes appeared to be sunk.

This man although he had not been drunk for several days was an excessively hard drinker. His countenance was always thin and sharp, and his eyes particularly small.

The calomel ℈i was placed upon his tongue and washed down with the draught as before given to Jones. He vomited this in half hour and had two watery stools; at this time his skin was cold and clammy and his pulse altogether gone. He complained of great thirst and spasms of his lower extremities, another powder and draught were immediately given and repeated every hour. He suffered much from spasms, warm fomentations were applied to the abdomen and legs and a stimulating liniment composed of pulv. lyttæ, and spt. terebinth. rubbed briskly over the epigastric region, his skin still continued covered with a profuse clammy cold sweat, great restlessness, spt. ammoniæ, hot brandy and water, were given with a view of stimulating the stomach, but he died at ½ past 2 A. M of the 18th.

The body was opened at 3 P. M. about 12 hours after the death. The liver was found without any disease, the gall bladder with a due proportion of healthy bile, the inner coat of the stomach slightly inflamed; appearances of congestion in the small intestines, spleen rather of small size and natural, large intestines natural, bladder empty and collapsed.

It should have been remarked, that this man, about an hour previous to his death, complained of being unable to pass his urine, some drops of the spt. æther. nitros were given and warm fomentations were again applied to the lower part of the abdomen; I attributed these symtoms to the cantharides and the appearance of inflammation on the inner coat of the stomach to the stimulating remedies which had been given him. He had been five years in India and of most disorderly habits.

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Private Demster of very sober habits and one year in India, was admitted at 1 A. M. of the 19th. He had felt unwell in the evening and at the recommendation of some of his comrades had drunk six drams of arrack with some pepper; he appeared to be under its influence when I saw him.

He complained of cramp in the muscles of his legs, had vomited but once and had been purged twice, both of which were watery, countenance much altered. Eyes sunk, damp skin, but attended with heat, pulse free but a regular intermission.

The calomel, &c. were given and repeated three times before day light, at that time he appeared better, he felt relieved by his legs being rubbed with spirituous frictions, his pulse was feeble but more regular.

It did not appear to me that he required more calomel; warm draughts of brandy and water were given frequently and with now and then a few drops of tinct. opii. He continued tolerably well under this treatment during the day; he slumbered much and the whites of his eyes always visible at this time; he had some rest during the night.

About 9 A M of the 20th, he had a slight vomiting of bilious matter and complained of weight and heaviness over the epigastric region, ten ounces of blood were taken from his arm and he appeared much relieved by it. He had some sleep during the day, but always with his eyes half open and cornea looking upwards, he took nourishment, and by an injection had a stool in which however there were no appearances of bile.

Calomel grs. x were given at night.

He had a tolerable night, and in the morning of the 21st, had a much better countenance.

Calomel grs. x were given with a view of procuring stools and was repeated at 12 o'clock, towards the evening he was evidently worse, his pulse was small and feeble, his countenance became bad, stools all milky white.

The calomel was repeated as were every description of stimulant, but he died at 3 A. M. of the 22d July. The body was opened at 9 A. M of the 22d, some appearances of inflammation were perceptible on the left ventricle of the heart—and the pericardium had adhered in that part; the liver was sound, the gall bladder empty and contracted, the stomach contained a considerable quantity of green bilious fluid, very slight appearances of congestion in the small intestines.

Drummer Vine, a stout half cast man was brought to the hospital at 6 A. M. of the 19th.---He had attended a funeral the preceding evening and had got wet; this was a very drunken character, he had been purged the whole night and was now affected with cramps and spasms in his lower extremities, had not vomited; his skin was cold and bedewed with a clammy sweat, no pulse to be felt, countenance ghastly, eyes sunk, much thirst, appeared to suffer greatly from spasms affecting his abdomen; the same remedies as above were given, his extremities were rubbed with spirituous liniments, a blister was raised over the epigastric region, the medicine was retained until he had taken five doses; he then vomited once and brought up but little, he had no purging in hospital, every stimulating remedy was tried with assiduity, but in vain; he died at ½ past 1 A. M. of the same day.

Private Bradey had been at parade on the morning of the 21st and was brought to the hospital at ½ past 9 A. M. 22 years in India, a very hard drinker and had been every day for many days previous to his illness in a state of intoxication. He had been purged two or three times, stools all watery, complains

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of severe cramps all over his body; was not able to support himself in coming out of the dooly and would have fallen had he not been caught, had not vomited, a weak pulse, skin cold, but not clammy, countenance contracted, eyes sunk; 18 ounces of blood were with some difficulty taken from both arms, the circulation being so languid the blood did not flow freely; he vomited the first dose of calomel. It was repeated, and in four hours five doses of the medicine were retained on his stomach, no relief was found from any remedy; and he died in the evening at ½ past 5 P. M.

During the afternoon and evening, three other cases of this malignant disorder were reported; they were all of a few hours standing; two were bled but from the languid circulation but few ounces could be extracted; the warm medicated bath was used in two cases, but without the least effect save the temporary cessation of the spasm; the third case was bled, but vomiting was produced and apparently from the loss of a few ounces of blood; in the course of the night all these men died.

On opening the body of Bradey, the heart exhibited the same appearance of inflammation as in Dempster, and the pericardium adhered to its left ventricle.

The liver was free from disease, the gall bladder moderately filled with healthy bile—the small intestines exhibited strong marks of congestion and approached much towards inflammation.

In the body of Hansell, 22 years in India, nothing was observed worthy of remark, but there was less appearance of congestion in the small intestines than in any other.

The drummer who attended the funeral of these men at 10 A. M. was himself brought to the hospital at ½ past 11. He was put into the medicated warm bath, calomel, &c. and stimulants were given in as large quantities as in the other cases but in vain. He died at 5 P. M.

Private Clarke was brought to the hospital on the morning of the 23d with the usual symptoms; collapsed countenance, cold skin, feeble, fluttering small pulse. The warm bath and the remedies were used to the greatest extent as in the other men. His spasms and cramps were very violent, and the vomiting for the first hour very distressing. No relief was derived from any thing, and he died at 12 o'clock that night. The veins of Clarke's (both) arms were opened and in that state put into the warm bath.

Whilst digging a grave for the drummer who died the preceding evening, camp colour man Woods was seized with cramps and vomiting, and was brought to the hospital at ½ past 8 A. M. He derived much ease from the warm bath and wished it to be repeated. He vomited the first dose of medicine but retained in four hours five other doses. He died at 5 P. M.

During this day many cases occurred of this disease, but in a much slighter shape.—The vomiting and the spasms about the stomach and diaphragm were more distressing than in the former cases, but there was always considerable heat of skin—good firm pulse, and unchanged countenance. These cases excited considerable alarm amongst the men.

In two of these cases there were constant and loud hiccough. The stomach rejected every thing if given in quantities. Tinct. opii with æther vitriol were immediately thrown up—as if by some spasms of that organ. The calls for cold water were incessant. Frictions with camphorated spirits were used over the extremities, and a large blister applied to the epigastric region. They vomited nothing but viscid phlegm and their stools although frequent were small and in substance resembling white conjee or conjee and milk. The stomach was kept empty and the vomiting much relieved by a pill containing opii grs. ii, camphor from grs. iv to vi, as soon as the stomach appeared more settled a pill containing calom. ℈ i, opii grs. i, was administered and retained. This was repeated in four

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or six hours, purgatives were then given but there was considerable difficulty experienced in producing stools. The jalap. compos. infus. sennæ, or solut. magnes. vitriolat. pil cathartic, and the enema nicotianæ did not produce any stools. The latter produced all its usual effects, deliquium colliquitive sweats but no purging. The croton pill of one grain appeared to me in these cases to have had the best effects. It produced as usual (as far as my observation has gone in the use of that medicine) in some vomiting and in others griping, but in all copious evacuations. By keeping the bowels open (and which was not difficult after this) no unpleasant symptom returned. In all these cases there was clearly a want of bile in the intestines, and producing that, caused immediate relief. Many cases of this description with spasms more or less violent and with the stools of the same appearance as I have before described, were admitted during the 23d, 24th, and some on the 25th. They were relieved by the same remedies, but the difficulty of procuring stools was in all similar and yielded to the croton pill in several. No cases of the malignant epidemic appearing for many days. I was willing to hope it had entirely left us, but at half past four of the 28th, Serjeant Scott was brought to the hospital with a livid contracted countenance, eyes sunk, no pulse; a cold sweat bedewed his whole body, his hands wet and shrivelled. He was immediately put into a warm bath in which several bottles of arrack were poured and the calomel, and tinct. opii, &c. given him; five doses were given and retained but he died at 8 P. M., not having been more than five hours ill.

This man had returned from leave the day before, having been some distance on the Jalnah road to meet his family. The exposure at night without a tent may be considered as one cause of the disease in him.

On the following morning Private Warner a patient in hospital was reported to me as being seized with cramps in his legs. He had been purged in the night. But as his bowels had been for some time irregular, a gentle apperient had been ordered for him.

His skin was cold; he had vomited several times; his countenance much altered; a very feeble pulse.

Calom. grs. xxv, and tinct opii gtts. 120 were given in some wine. It is necessary to observe that mercury in this man invariably produced the most distressing symptoms, always attended with an affection of the head, much resembling insanity. This he accounted for by some accident received at a former time in his head.

In this instance it produced the same. The vomiting was distressing but much bilious matter was brought up with the calomel, &c. He was put into the warm bath and carefully wrapped and kept as warm as he could be after coming out, his body soon became cold and his skin covered with a clammy sweat, his countenance and eyes had the appearance of those who had died of the disease before, but there was a feeble fluttering pulse always to be felt at the wrist; a blister had been applied to the nape of the neck to relieve the affection of his head; warm wine and brandy and water were given him in small but frequently repeated quantities; he speedily recovered; there were no more cases of the malignant species of the epidemic after this, during the month of July. The symptoms in every case were very nearly similar, but the vomiting and purging which have no doubt given the name of Cholera to the disease were by no means constant or so violent as I have seen it described.—The vomiting in no one instance of the 12 cases that died in this regiment ever interfered with the exhibition of the medicines; if the first dose was vomited the second and others were retained; and calomel, tinct. opii, spt. æther vitriol. aquæ ammoniæ, wine or brandy were given in vast quantities and never vomited.

Private Bradey vomited but once, and that probably caused by the medicine; the first dose was vomited, the rest retained.

Drummer Vine although he had been several hours ill with the disease

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before he was brought to the hospital did not vomit until two hours previous to his death. The stomach in those who were opened was invariably found half full of fluid, but there appeared a sudden depression of every vital energy, and those who died had more the appearance of persons labouring under the bite or sting of some poisonous reptile than from disease.

The calls for cold water were incessant, and if warm brandy and water or wine were given, they were drunk as desired, but without that apparent satisfaction that cold water would have been received with. The spasms in general were very distressing and often commenced in the lower extremities. The muscles of the abdomen and thorax in some were violently affected. Relief was often experienced by rubbing hard with the hands. The patient frequently called to those about him to rub hard wherever the spasms appeared to be most violent.

The warm medicated (or even the common bath) appeared to give temporary relief to the spasms, and one man (camp color man Woods) desired the bath might be repeated, and he derived ease from it. Bleeding did not appear to produce any effect generally; the blood was drawn with much difficulty, and little could be procured. The veins in the arm being tied continued lax, and did not fill as usual, from the extreme langour in the circulation.—Only in two instances did the blood flow in a stream, and that but for a few ounces; whatever good effects may have been derived from bleeding in other parts of India in this disease, it must have been in a very different description of it than as it appeared here.

The livid colour of the lips and the sunken countenance were strong proofs of what a state of langour existed in the circulation; in one instance a fine young man (Duff) who had been in perfect health an hour before, the loss of a very few ounces of blood was followed by a retching, which was not allayed for some time.

In Private Clarke, a very athletic young man, the veins of both arms were opened previous to his being put into the bath; some blood was procured by that means, but the termination was similar to others; every means were taken to induce a flow of blood after the veins had been incised but little could be procured.

The spasmodic affection in general entirely subsided some hours previous to death, and the patient lay with the eyes half closed, a cold clammy sweat over the whole body, without pulse, and not inclined to speak, but if spoken to would take every sort of medicine and answer rationally; with the exception of Warner (who recovered), the intellects were never impaired, and they would speak rationally to within a few moments of their death.

As the exhibition of calomel in this disease has been considered of great service, I cannot from my own observation say any thing in its favor; the plan recommended by Mr. Corbyn of placing the calomel on the tongue did not appear to me to answer—much of it was lost in the mouth and fauces, and I think calomel made up into a bolus (if at all necessary in the spasmodic stage of the disease) is a more desirable plan—in Warner no calomel was exhibited after the first dose had been rejected, and which in this case produced most distressing effects; and he recovered, clearly by the use of stimulants, but the effect of the calomel remained (his senses much disordered) for two days.

The appearances on inspecting the bodies throw no light on the cause of the deaths being so sudden. In some cases but little alteration in any of the viscera from their natural state was to be observed, and what did appear, had more the resemblance of the effects of this violent disorder than of its cause; the almost total want of circulation in the extreme vessels sufficiently accounts for the congestion visible in the viscera; in no instance was there any thing discernible that could be considered as active inflammation.

In the left ventricles of the heart of Dempster and Bradey there were appearances of inflammation, but this may probably be accounted for by the violence with which that part of the heart must have acted towards the latter end of the disease---bleeding has been, in many parts of India, said to have had good effect; from my ill success in every plan I had laid down in the treatment of this disease I was much disposed to try any remedy, but I saw no good derived from bleeding, except a temporary relief in the case of Dempster; I had some reason to expect this case would have been saved; on the first appearance of this disease in camp every means were taken that could be suggested to prevent the exposure of the men at night. The men on duty were much reduced and the sentries but few—the tents were closed at 8 o'clock, and no person allowed to go out during the night—the men were also ordered to drink their drams at the tub to prevent drunkenness as much as possible. After sunset all the sentries mounted in their great coats.

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A very great number of the cases which appeared in the Madras European Regiment were reported within during the night or early in the morning—It is not easy to say what has been the cause of this destructive epidemic—which in every essential differs materially from Cholera Morbus—that exposure may be considered an existing cause is evident, both in Europeans and Natives—No officer had any thing like an attack of the disease in this camp.

The cures amongst the natives were by no means numerous—A flag was hoisted and a tent pitched for the reception of all those afflicted with the disease and proclaimed by beat of tom tom that remedies were to be found there—every distinction of cast was laid aside, and people brought of all descriptions who eagerly administered to their friends the remedies prescribed.

In the natives the disease bore an exact resemblance to that of the Europeans—but the spasms in them did not cause (apparently) so much distress—arrack and warm water had the best effect after the stomach retained it, and I must confess that the tinct. opii. with arrack appeared the most useful remedies—many lives were saved by these means amongst the sepoys or followers of the Native Corps; the casualties were not numerous, and the deaths were most frequent amongst the lower class of followers of the camp who were badly clothed and fed—and who had no friend either to give them medicines or but little clothes to cover them.

It is worthy of remark, that the 17th Native Infantry had not a single case of the epidemic either in the corps or any description of its followers; that corps was encamped with all its followers, bazars, &c. between two hills through which there was a strong current of air--whilst to the left of the Line, where the European Regiment was encamped, the ground was lower and more confined.

In one instance here, a native was brought labouring under the most violent spasm which I had seen in a native, both of the lower extremities and muscles of the thorax and abdomen, but who had not either vomited or purged---he died in this state after a few hours illness.

Cases of the epidemic still continue to be reported; I am very apprehensive it has not entirely subsided.

Camp color man Woods on admission was bled---for a few ounces the blood flowed in tolerable stream--but it soon ceased and produced such great debility, and the pulse sunk so much that his arm was obliged to be tied up before ten ounces could be procured; this was considered a case favorable to bleeding, but it did not prove so.

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During the month of June some slight but well marked cases of the Epidemic Cholera appeared in the Madras European Regiment, and in the details of the Horse and Foot Artillery at this station—none of these were fatal—the

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symptoms generally were vomiting and purging with some prostration of strength, cramps in the toes and fingers, skin seldom below the natural heat, and with a good regular and firm pulse—when the vomiting was present the camphor and opium pill (camphoræ gr. iii and opii grs. ii) was given. All these cases were mild but required attentive watching.

On the morning of the 25th of July, Private Hogdon of the M. E. R was brought to the hospital at 7 A. M., he had been purged since 12 o'clock and had vomited once—skin cold and livid, and covered with moisture, thirst, no pulse, the branches of the temporal artery perceptible over the forehead and temples, but without pulsation; very slight spasmodic affection of the muscles of the toes, countenance collapsed and voice much sunk.

A draught containing tincturæ opii ʒ i was given in warm wine and retained—frictions to restore the circulation and stimulants were given by the mouth but without any effect, and he died at 6 P. M. This body was not opened.

Private Kelly a patient in the hospital for a venereal complaint and somewhat debilitated from a course of mercury and confinement, complained at 1 P. M. of the 26th of July of his having been purged much during the forenoon—stools all watery, voice low, face thin and contracted, skin cold and damp, pulse 80 firm and good, no vomiting, but feels a heavy load at his stomach, slight cramps in his feet.

Tinct opii: gtts. 80
Aquæ menthæ ℥ i, ft.—was immediately given and retained---at 4 P. M. a slight return of vomiting took place and tinct. opii. gtts. xl. was repeated—pulse continued good—at 6 P. M, calomel gr. xv. was given---at 9 P. M. was in a sound sleep with a warm skin and a good pulse---towards the morning, became very restless, and as he had no stool and complained of fullness of the abdomen---an emollient enema was given---soon after a vomiting took place and it was discovered that a considerable quantity of cold water had been drank, his skin was then cold, and his pulse much diminished in strength. The pill camphor et opii. was given, and no liquid was allowed. The enema procured a feculent stool---and during the day a purgative was exhibited, and no more unpleasant symptoms appeared.

John Dick, Private Madras European Regiment, an elderly but healthy soldier, was brought to my house at 3 A. M. on the 7th of August, had been purged since 12 o'clock at night and had vomited once, countenance bore much of the disease---slight cramps in his toes---skin warm and pulse very firm and 84---pill camphor et opii was given and repeated with a glass of wine at 4 A. M. a blister was applied to the præcordiæ at 11 A. M. calomel grain x. was exhibited---neither vomiting, purging or cramps returned---and during the following day some stools were obtained by medicine, and he was discharged when the blister was healed.

On the 7th of August (the same day the preceding subject was admitted) Private Roberts, a patient in hospital, was seized with the epidemic disease—this man had been admitted on the 30th July with fever; at the time of his attack he was in a convalescent state, and his mouth very sore from mercury. On the morning of the 7th, he told me he had been much purged during the night, and had vomited since day light; skin damp with some warmth, pulse feeble and irregular, voice much affected, some cramps about his toes, haust cum. tinct. opii gtts. lxxx was given, and a blister applied over the precordia; the draught was immediately rejected, pill camphor et opii was given and retained; the patient was immediately placed in the vapor bath, the heat produced was sufficient to keep the body warm, but the pulse soon was lost, and although the heat was increased and every stimulant was given to restore the circulation, but in vain; the cramps were severe until about 10 A. M.; he died at half past 2 P. M. of the 7th.

The body was opened about two hours after death. The lower part of the omentum had its vessels filled with blood, but on raising the omentum, the small intestines did not show the smallest appearance of disease. The gall bladder full of dark green and viscid bile; no appearance of disease of the stomach either externally or internally, the urinary bladder empty and contracted, the liver much diseased in its substance, but this must have been of long standing.

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Serjeant Dogherty, a patient in hospital, had been long ill with a rheumatic complaint, and was in a very great state of debility and emaciation; was taken ill on the morning of the 13th August with vomiting and purging and cramps in his toes, pulse very small and feeble at 5 A. M. and his skin damp and cold, countenance bad; the haust tinct opii was immediately given and instantly vomited, and on being placed on a bed pan, feeling an inclination to go to stool, he fainted, and his pulse for a few minutes disappeared, but soon after returned; the pill camphor. et opii was given and retained, at ½ past 5 A. M. the skin had some degree of warmth and his pulse rather improved; he was placed on the vapor bath at six, from the heat, his skin became warm for a short time; no pulse at ½ past 6, and from this time to his death he had no cramps or vomiting or purging, but nothing restored the circulation. He died at ¼ past 1 P M. the same day. The body was opened three hours after death, and but little appeared worthy of remark; the gall bladder was of large size filled with dark green bile, slight appearance of congestion in the small intestines, stomach containing much fluid but without disease, urinary bladder empty and contracted.

John Earwicker of the Artillery, apparently a thin spare man, was brought to me at ½ past 2 P. M. of the 15th August 1819, had been purged and vomited since 12 o'clock the preceding night, felt cramped in his legs; in the forenoon was on sentry between 11 and 1, when the purging came on, the vomiting appeared in the morning, his skin was cold and damp, pulse feeble but regular, features contracted, took the haust immediately and did not vomit, had three watery stools during the afternoon, was placed on the vapor bath on which he fell asleep and died at ½ past 1 A. M. of the 16th August 1819 —This man from the moment he arrived never complained of any pain in any part or suffered the least from cramps; I saw him half an hour previous to his death. The pulse was scarcely to be felt, but the vapor bath caused the heat of the body to return.

This body was opened fourteen hours after death; the omentum, stomach and small intestines had more the appearance of congestion than the bodies recently opened; gall bladder large and distended with dark coloured thin bile, tinging the parts in contact with it; urinary bladder empty and contracted. No other cases of this dreadful disease have terminated fatally during the month of July and August, or since the appearance of the disease in this cantonment.

In all these cases there was a great similarity; they were all kept on the vapor bath with the fire applied until they died, and altho' the heat of skin was restored, it did not like the warm bath restore the circulation to the extremities ---the vapor bath is a ready and simple means of applying heat, but it is not so effectual as the common warm bath.

In all these cases stimulants in draughts were given during the time the patient was on the cot, and consisted either of warm wine or mixed with water or brandy and water---but patients altho' apparently suffering much from thirst required some persuasion to induce them to take it--they complained of it being too strong and occasioning a burning sensation in the stomach---cold water was eagerly called for.

To have bled any of the men whose cases are above detailed could not have been effected, as I am satisfied from my own experience no blood could have been procured---and in Hogdon, although the temporal artery could be distinctly traced over the scalp, had it been divided, no blood would have flowed from it---this I have ascertained in former cases. In fact from what I have seen of this disease in malignant cases no blood can be procured, and in the milder

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cases bleeding is unnecessary---had I bled every case when men have come to me with vomiting and purging I have no doubt, but I could have given a long list of cures of the Cholera Morbus by the lancet and opiates, but I cannot consider these symptoms alone as constituting the present malady, Spasmodic or Epidemic Cholera---where with vomiting and purging the face becomes contracted, the lips livid, &c. livid circle below the eye—altho' the skin be warm and the pulse good I know that bleeding will aggravate every symptom, and that the pulse will soon decide how far bleeding in that case be necessary—on the other hand where with vomiting and purging even with spasms of the legs the skin be burning hot---a violent head-ach with flushed face—and on enquiry the bowels previous to this attack have been costive for some time (perhaps a day or two only) there can be no doubt of the propriety of using the lancet—I have had many of these cases, but I have never considered them as belonging to the Epidemic but as attacks of fever (generally arising from accumulation in the primæ viæ); convulsions and cramps are not uncommon symptoms in an European hospital in many diseases, and should carefully be separated from the disease in question.

From whatever cause this disease may take its rise, it is my opinion that its malignant influence is upon the heart and that viscus is deprived of the power of acting to its full extent, consequently after a short time there must be a considerable venous accumulation known by the livid skin, which is the effect of the disease, and not, according to my judgment, its cause.

To allay the vomiting in the early stage of the disease has always appeared to me to be of the first importance, and that is most readily done by medicines that can be conveyed into the stomach in the smallest compass. The haust. cum. tinct. opii. has been in my opinion frequently rejected from its sudden mechanical action of dilating some part of the stomach. I have found the most decided good effects in cases were this irritability of stomach exists in the camphor and opium pill—but at the same time fluids of every description should be abstained from. A blister applied to the epigastrium assists materially, and I think the common blister does for this purpose equally well with the nitrous acid or hot water blisters.

When the vomiting is not a distressing symptom, the medicine given in quantity certainly has a great advantage over pills—but as the debility in every bad case proceeds so rapidly, and vomiting in some measure accelerates that symptom, to put a stop to vomiting is an object of the first consideration.

In the numerous bodies which I have opened who have died of this disease nothing has ever appeared that in my opinion can be considered as acute inflammation—the small intestines and mesentery have in some instances the appearance of congestion in the blood vessels, but this is not a constant appearance ; in every case bile has been found in the gall bladder, except when bilious vomiting have occurred. The urinary bladder has always been found empty, and it does not appear that any secretion during the existence of the disease goes on.

May not this circumstance arise from the circulation not being sufficient to admit of the secretion taking place as usual?

It is not an easy matter to ascertain by dissection where spasm has existed—but I have in one or two instances found the large intestines of remarkably small size through their whole course—this I have remarked in cases when the epidemic disease was never thought of—and I considered it as an original formation and unconnected with the disease in question.

That when this disease prevails those most exposed (I speak of soldiers) at night, and those who from sickness or drunkenness are much debilitated are the most liable to suffer from this disease, has I believe, been generally admitted ; but a humid atmosphere, so far as I have made any observation on this subject is more pregnant with this pestilential disease than a dry clear one, and wherever

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the disease has prevailed in the Regiment it has been more frequent and fatal there, than at any other time.

From all I have heard, high and elevated situations are less exposed to this disease than others ; not one case occurred in the parties or troops stationed in the hill Forts of Trimbuck and others in Candeish during the last season ; and altho' the disease appeared in the lower fort of Asseerghur at the commencement of the present rains in the Battalion of Sepoys stationed there and killed some, yet the Europeans stationed in the upper fort did not suffer; but in a party of soldiers invalided and marching to Jaulnah, the disease attacked them and several fell victims to it.

The situation of the 17th Light Infantry, in the camp there, commanded by Lieuteant Colonel M'Dowall was also exempted, and on that corps marching and the same ground occupied by another corps the disease did not attack an individual of it although it prevailed in camp.

These corps occupied a space between two hills through which there was a constant and strong breeze ; the mild cases of the disease which have occurred during the months of June, July and August have been about twenty, and have all had either more or less prostration of strength with the decided countenance which always appear in the disease, but if the pulse has not sunk and has kept regular, I have never felt much anxiety respecting them ; they have all been attentively watched and medicines given as the symptoms advanced or disappeared.

Asst Surg. S. Christy, Sindwah, 1st October 1818.

We had incessant rain until the 15th, at which period the weather cleared up, and there has been only one shower since : at present the sun is powerful with high winds.

I am sorry to say that the list of casualties in the present month much exceeds any thing that has occurred to me, but from the detached state of the corps, men are brought to the battalion hospital in the last stage of disease, at which period medicine is of little avail ; these circumstances, and that unaccountable disease (Cholera Morbus) having appeared here, will in a great measure account for the present list of casualties.

Shaik Martum sepoy was admitted on the 10th September 1818 ; he complained of a turning in his head and want of appetite with general lassitude ; these were the prominent symptoms in all the fevers which occurred at Sindwah (in the month of September 1818), in the earliest stage of the disease ; upon his admission an emetic was given and after its operation his bowels freely evacuated, he complained of a little fever about 4 P. M. and a pill composed of calomel, ipecacuan and camphor of each one grain given every hour ; on the morning of the 11th, he said he felt much easier, his bowels open, continued the pills ; about 5 o'clock P. M. he was asleep when I visited the hospital, and in the course of half an hour he was seized with a violent vomiting and purging of a watery fluid; he complained of spasms in his limbs, 15 grains of calomel, 50 drops of laudanum and ten of ol. menthæ were immediately given, warm fomentations applied to the abdomen, and four men rubbing the extremities with warm cumlies, and hot brandy and water given to support his strength ; after the medicine had been given the vomiting and purging ceased, and he said he felt a little easier, his limbs were cold from the first moment, and he lay on his back without the power of moving his fingers, and his voice appeared as if it came out of a mass of clay ; every effort to produce reaction became ineffectual, and he expired about 7 o'clock ; an hour and a half after he had been attacked.

Appearance on Dissection.

Upon opening the abdomen the peritoneum shewed strong marks of inflammation ; the internal coats of the stomach, intestines, and biliary ducts, presented a white corrugated appearance, and were much thickened, without

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marks of external inflammation, but when opened the strongest appearance was exhibited ; distinct globules of blood appeared in the ramifications of vessels, which in a healthy state contain a colorless fluid ; the stomach contained a little watery fluid, and the intestines were inflated with air : the gall bladder was filled with a thick dark colored bile of so acrid a quality that it tinged the part of the duodenum (against which it pressed) of a brownish color through the three coats : the liver was much indurated—The thoracic viscera exhibited no marks of derangement.

From the above appearance, as also from a conviction, that in cases of visceral inflammation the pulse gets fuller and softer by bleeding, and also knowing that visceral inflammation is liable to terminate in gangrene in three hours where the symptoms are violent : these considerations induced me to try the effects of bleeding, unfortunately the four first cases were not brought to the hospital in time to try the the experiment, although repeated orders had been given by the commanding officer and adjutant. Since that time, when a man is admitted I immediately take from 12 to 20 ounces of blood from his arm, which has not as yet failed in allaying the irritability of the stomach, 15 or 20 grains of calomel, 50 drops of laudanum and ten of ol. menthæ ppt. was then given ; if there was spasm or pain about the abdomen it was rubbed over with ol. terebinthini and pulvis lyttæ in the same proportions as is commonly used for blistering horses, and at the same time the extremities rubbed with warm cumlies and frequent draughts of warm diluent liquids given ; and the after treatment was merely mild purgatives or simple injections varying according to symptoms ; as none who were brought to the hospital in time to admit of this treatment have as yet died, I have generally adopted it, except where men who have been some time in hospital and much reduced from previous disease are attacked, or when they have remained out until a degree of coma comes on so far as to render the practice above, injurious ; in the latter cases I have adhered to Mr. Corbyn's plan of treatment, but am sorry to say that all the casualties have occurred from this description of cases, which may be attributed to the want of strength to withstand the attack in the one case, and the inflammation having gone too far in the other.

Asst. Surgeon W. Wilson, Mhow, 7th September 1818.

The disease which under the denomination of Cholera, has pervaded so large a portion of India, made its appearance about the middle of July among the followers of Bajee Rao's camp, and that of the Gwickwar contingent, about a mile in front of the lines occupied by this division, and in a few days afterwards a few cases occurred among our own troops and quickly the number increased to a very considerable extent. The symptoms of the disease as far as I had an opportunity of observing them were as follow.

The patient complained of slight vertigo and deafness rather than tinnitus aurium, followed by a creeping or prinkling sensation over his body particularly along the spine and in the extremities, which last quickly began to lose their natural heat and strength of circulation, succeeded by (without nausea but preceded by a sense of suffocation) vomiting and purging of a watery fluid, having more the appearance of being simply the evacuation of a greatly encreased secretion of gastric juice than any thing else. The tongue much loaded and thirst very urgent, the extremities soon became quite cold and the pulse not to be felt at the wrist, often not in the axilla ; the muscles of the extremities became affected with severe cramps or spasms which afterwards extended to those of the abdomen, the patient complained of a sensation of burning heat in his stomach and bowels, the eyes became sunk and wild in their expression, latterly fixed and glassy, features sharpened, and altogether the most distressed expression I ever witnessed ; in some cases to these were added stranguary to a very great degree, the patient fell into a state of lethargy from which he was with the utmost difficulty roused, but when he could be excited to speak, his faculties appeared to be entire to the very last ; in this state he continued unless effectual means of relief were applied ; till death insensibly terminated his existence.

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My charge, which consisted of Lieut. Colonel Skinner's Horse, Bajee Rao's camp and the bazars and followers of our own, gave me no opportunities of examining any bodies after death, and as the disease did not make its appearance among the Europeans till the evening before Sir John Malcolm marched from Mhow, I must trust for the appearances on dissection to the reports of other medical gentlemen; these seem to have been strictures in the stomach in the course of the large intestines and in the biliary ducts, the gall bladder in some cases full of dark coloured bile, in others not; the structure of the liver not frequently affected, but inflammation going sometimes to gangrene in the stomach and large intestines, the small in general not so much affected, the contents of the alimentary canal in some instances though by no means the greater proportion, black, in others having only the appearance of encreased natural secretions, the vessels of the head in some cases fuller than natural, and as I learn from Jaulnah in some cases inflammation of the pericardium, congestion of blood in the lungs, and the thickening of the coats of the urinary bladder.

The rapidity with which this disease runs its course, terminating fatally in some instances in five or six hours, gives no room for delays in its treatment, in which I was guided by the account of the mode used by Mr. Corbyn and published by that gentleman. The success which had attended it in his hands, and the circumstance of the few cases which had occurred in this force about a month and a half before, amounting to nineteen or twenty, having all of them readily yielded to it, gave me great confidence in it—and in the manner alluded to, with the addition of the use of the hot bath, were all my patients at first treated—I soon found however that my expectations of equal success were to be disappointed; I have in almost no case found much difficulty in checking the vomiting and purging, but the patients uniformly sunk into the state of stupor above described, with frequent and violent spasms and the greatest exertions were afterwards necessary to recover them from it; the means I used for this purpose were, hot baths, stimulating frictions and blisters externally, and internally strong stimulants very frequently repeated till the pulse became perceptible at the wrist, and continued at longer and longer intervals till the surface regained heat, the pulse strength; that once accomplished, the natural expression returned to the eyes, and the bowels being freely opened by means of large doses of calomel to excite the action of the liver (which I gave freely from the commencement of the disease) and infusum. sennæ c. sulphat. magnes. or ol. recini, the patient was out of danger.—As a stimulant internally I gave, having no other to administer, six grains of camphor, suspended in warmish water, sometimes with, at others without, oil of peppermint every quarter of an hour till the circulation was in some degree restored to the extremities and heat to the surface, and then gradually diminished the dose and lengthened the intervals at which it was taken till it could with safety be discontinued; tincture of opium I used as sparingly as possible as I imagined that it had an immediate tendency to induce the fearful degree of torpor which comes on, and indeed at first I feared that it was in a great degree the cause of it, though that is not the case; I have no doubt that from the very large quantities in which it is exhibited it very greatly encreases the abovementioned symptom which I have always found to be the most formidable one in the history of the disease.—The patients were ordered to drink warm conjee and every means used to prevent their procuring any thing cold, drinking which, has been uniformly followed by the very worst effects.

The following will shew the result of the mode of treatment I followed from the 16th to the 21st of July inclusive

	Taken ill.	Died.	Recovered.
Skinner's Horse........	73	4	69
Followers of do.........	20	3	17
Bajee Rao's Camp......	55	7	48
Camp Followers..	47	11	36
	195	25	170

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From this statement it will appear that the number of deaths has been much greater than I had led myself to expect, but it may be remarked that the disease seems to occur with very different degrees of virulence in different places and even at different times in the same place; for example the disease which had been in this camp a few weeks before was certainly much milder than it was when it made its appearance the second time, and it yielded readily to the treatment used by Mr. Corbyn; in its last attack it varied considerably in violence at different times, almost every man who was taken ill on the 19th and 20th July died; I may also state as a cause of my not having been so successful as I wished and hoped to be, that in all cases in Bajee Rao's camp and among our own and Colonel Skinner's followers the disease was considerably advanced before assistance was asked, and the patients when brought to the hospital were generally left without any one to pay particular attention to them, with a disease which requires a particular attendant, with almost each individual; I found it next to impossible to prevent their drinking cold water; the rains were at their height and if the patients could not procure cold water otherwise they drank it from the pools which stood near the tent; it was also impossible for me to be as much with the sick as might have been desirable, the three hospitals of which I had charge gave me a circuit of five miles in visiting them, they were necessarily therefore left a great part of the time under the care of native assistants, only one of whom could be given to each hospital, and I think it very doubtful that they, removed from constant superintendence, did their duty, the most careful performance of which would not have been even sufficient. These were great drawbacks, and ought to be taken into the account, in judging on the propriety of the mode of treatment used.

The practice of bleeding freely both Europeans and natives was latterly followed with great success by Messrs. Kellet of the 3d Light Cavalry, and Boyd of the 2d Battalion 6th Native Infantry, in every case in which it was practicable, and there is so much of reason in the practice, that I think it ought in no case to be neglected; of my patients there were not half a dozen cases in which it could have been used when they were brought to the hospital; Mr. Powell of the Bombay service has told me that he saw great benefit from raising quickly, external inflammation on the epigastric region; this he did in the following manner; he applied on a sponge to the extent required a mixture of two parts of sulphuric acid and one of water; as soon as the patient complained of pain he neutralized the acid with an alkaline mixture and applied a blister over it. I have found much advantage from the application of a common blister to the region of the stomach, it allays irritation and enables the patient to retain the medicines which are given to him.

The natives of this country, among whom the disease is by no means unknown, are in the habit of giving to those affected with it, a strong solution of common salt in water; some give the following mixture, one pice weight of onion juice, and two pice weight of arrack, both these have violently emetic effects, but they say they are very successful in treating it in that manner. After leaving Mhow, I gave to one or two slight cases, tartar emetic with certainly good effect; by determining to the surface, it quickly restored pulse and heat, and it might I think, combined with opium, be used with advantage; I have not however had opportunities of trying it sufficient to enable me to do more than conjecture.

What it may be which causes this disease it appears impossible to say; that its existence depends upon diet, is extremely improbable in this country, where the natives live all in the same manner; it had been raging in one quarter while a single march will take you clear of it, though almost every village has had it in its turn. It is clearly independent of any sensible change in the state of the atmosphere, we have seen it in the hottest and the coldest weather, and during the rains; it is not however as far as the treatment of the disease is concerned; a point of very great importance; an enquiry into the proximate cause however is of essential consequence, but it is one of very great difficulty on account of the rapidity with which the disease runs its course, and the generally short period of

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its continuance at one place, during which, though a great number of cases may be brought under our care, the disease has disappeared before, on so dark a subject, a rational opinion can be formed; I feel therefore great reluctance to enter on the subject, to do which, nothing could tempt me but a sense of the duty which it is of every man to state what he thinks, in order to promote the ultimate acquirement of a correct and practically applicable theory of so horrible a disease.

The appearances on dissection certainly show much inflammation in the viscera, but I cannot from what I have seen of this disease, believe it to be one essentially inflammatory, or that death is in all cases the consequence of the degree to which that may have run; I never saw from gastritis or enteritis, so sudden a loss of circulation and vital heat, nor do I believe that any degree of inflammation short of its actual termination in gangrene could produce the state into which an hour or less of this disease throws the patient; in fact in those cases which terminated most quickly in death the inflammation does not appear to have been high, and I must look upon it more as a secondary symptom arising from the lost balance of the circulation, and an effect, not a cause of the disease, which I am persuaded is essentially spasmodic or nervous, affecting chiefly the circulating system, that is, a want of nervous energy in that system, and first showing itself in the extremities and external surface of the body, the pulse becomes feeble, the surface cold, and as the circulation fails, the vital heat and nervous influence are diminished, and the muscles become affected with violent spasms, which proceed in this manner from the extremities to the trunk till the patient sinks. The vomiting and purging of watery matter are a natural consequence of the diseased state of the vessels of the external surface which encreases the secretions from the internal till nature by her own efforts expels them; that congestion of blood and inflammation should be the consequence of this morbidly encreased action of the viscera, may readily be conceived, when we consider the loaded state of the internal circulation arising from its total cessation in the extremities; the state of torpor into which the patient falls appears also to be the consequence of a partial suspension, or great diminution of the action of the brain.

I have been led to this view of the disease by the following considerations; first, notwithstanding the appearances on dissection, the insufficiency of simple inflammation to account for the symptoms of the disease. Second; the history of those symptoms—Vertigo with the prinkling sensation in the skin and loss of animal heat and diminished circulation in the extreme vessels are the first appearances of disease; the well known smypathy and alternation of action between the external and internal surfaces then produce vomiting and purging, but these are unattended by pain encreased by pressure either on the epigastric region or abdomen, nor does the sense of burning which certainly becomes a very distressing symptom occur till the disease has existed for some time. Whatever may be the diseased state of the contents of the cranium, it certainly is not that of active inflammation, there is a total want of every symptom which is usually understood to indicate such a state, it does not appear to be compression of the brain, though the breathing is sometimes towards the end of the disease laboured, yet there is nothing approaching to stertor, and the difficulty appears to arise from the fulness of the vessels of the lungs impeding their action. The intellects of the patient when roused from the state of torpor in which he generally lies are entire, and that state appears as I have already said to be rather the consequence of the temporary suspension or great diminution of the natural functions of the brain.

The mode of treatment which has been used appears to point also to the same conclusion; the argument to be drawn from the successful use of venesection applies with equal force to either side, as it is equally useful whether it acts by removing inflammation or relieving the internal circulation, and enabling nature to restore the balance which had been so greatly disturbed; I shall therefore leave it out of my consideration; the treatment in other respects is very

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decidedly in support of my opinion, in fact I do not think that any disease, the proximate cause of which was inflammation could ever have had a chance of recovery from the remedies which in this disease were used ; there was no patient in whom I succeeded in restoring the circulation to the extremities and heat to the surface, who did not recover, and in all cases these were accomplished by means of hot baths, external frictions, and internal stimulants; I had a rather strong proof of the sufficiency of these means to remove the disease, in the case of a boy, a sepoy recruit, belonging to the 1st Battalion 16th Regiment N. I. who was in this camp with Lieutenant Low ; this boy had a severe attack of the disease, but had advanced so far on his recovery, that, on marching from this place, I allowed him to accompany his master ; on one day's march he prevailed on the dooly boys to let him drink a large draught of cold water, and he was brought to the ground after a march of 14 or 15 miles with certainly no sign of life about him, but a fit of vomiting which he had while I was looking at him; on the march I had no means of getting a hot bath for him, but I put about a dozen bottles of hot water round him, covered him up in a warm blanket, and gave him stimulating draughts every eight or 10 minutes, and encouraged the drinking in small quantities of warm conjee in which I sometimes put hot brandy; by perseverance in this plan, and assisted with the unremitting attention of three of his fellow servants, ensuring the constant supply of hot water to apply to him, I succeeded in about 15 hours in restoring pulse to his wrist, and in 48 hours all that was required was to prevent his having another relapse ; this was by far the worst case of the disease I have seen, the patient but a boy, scarcely well out of the first attack when he had a second ; but he is now with me, perfectly well, though not yet strong.

I must beg the indulgence of the Board to the opinions I have stated ; they may be erroneous, but the history of the appearance of the disease is exactly what I saw and learned from those who were affected with it, and if my speculations should, with the assistance of others, tend in the remotest degree to elucidate the nature of this most formidable scourge, I shall be satisfied with having run the risk of being told that I have taken a wrong view of the subject.

Asst. Surg. D. Boyd, Mhow, 1st August 1818.

The Cholera Morbus that has created so much interest and alarm, and committed such vast havoc over the greater part of India of late, at last made its appearance among the Men of this Corps on the 16th, and in two days after, raged with great violence and deplorable mortality ; it is ushered in by the following symptoms, vertigo, dimness of sight, a sense of weight, tightness, and anxiety about the chest, a sensation of a ball ascending to the esophagus, with a hawking as if something wanted to be expectorated, a tingling, or hissing noise in the ears, a prickly sensation generally pervades the whole body ; a severe vomiting and purging of a white dirty looking fluid, with violent spasmodic action of the muscles of the chest, abdomen, legs, and arms, generally, quickly supervene, and they are often contracted into a hard lump ; a burning heat, with pain on pressure in the stomach and bowels now take place, with urgent calls for cold water, which is thrown up immediately it is swallowed ; the extremities become cold, and the nails of the feet and hands of a purplish colour, breathing, in most cases, oppressed, and laborious, countenance collapsed and expressive of great agony, pulse scarcely perceptible at the wrist, and shortly after not to be felt, eyes become fixed, a cold clammy sweat breaks out first on the breast and hands, and sometimes extends over the body; the spams then become less violent, or disappear, coma comes on, but when roused the patient answers questions distinctly to the last, but with great reluctance ; when in this state, if re-action is not speedily restored, death in a few hours relieves the patient of all his sufferings ; these are the symptoms that generally take place, but sometimes they are of greater or less violence, and the whole do not always appear in the same subject ; the first patients admitted were treated agreeably to the plan laid down in Dr. Corbyn's letter, of the Bengal Establishment, with calomel and tinct. opii, repeated as symptoms indicated; the first dose was in many cases rejected, but the second seldom failed to sit on the stomach, and allay the inordinate gastric irritability

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and lessen the purging; but it proved such a powerful sedative in most cases, that the patient soon after swallowing the potion fell into a comatose state, from which, he could not be roused by the most powerful stimulants administered freely both internally and externally: from this circumstance, and my success falling far short of what I was led to suppose, from that conveyed in the letter before alluded to, and considering the mischief to arise in some degree from an over-sedative dose, I determined to abandon the practice, *in a certain degree,* and looking on the disease in some way connected with a want of action in the hepatic system, and an over-charge of blood in the internal circulation, from its being repelled from the surface on the internal organs (owing to something perhaps peculiar in the atmosphere) and from the known sympathy that exists between the liver, brain, stomach, and skin, it may in some manner account for the antecedent and subsequent symptoms; from this view of the disease, I considered it of an inflammatory, spasmodic nature, and bleeding being the best, or rather chief, remedy in such complaints, as at once lessening spasmodic action, allaying gastric irritability, relieving the heart and circulating system, and warding off inflammation and its bad consequences, especially when the disease was in its incipient stage; I therefore resolved giving venesection a full trial, and repeating it as often as the spasms, or cramps recurred, or until the irritation of stomach was appeased; at the same time a large blister was applied over the region of the stomach and bowels, and after the patient had recovered a little from the bleeding, as it was always carried usque ad deliquium, ten or fifteen grains of calomel was given mixed up in a little congee, and washed down with a draught of the camphorated mixture; by which means I seldom had occasion to repeat the dose, as the previous bleeding seemed to prepare the stomach for its receipt, and aid its operation in emulging the biliary ducts, and determining to the bowels, and restoring to them their balsamic bile, as in most instances there appeared a total want, or suppression, of that essential article; and the counter-irritation produced by the blister soon allayed all gastric uneasiness and prepared it for the receipt of any thing that symptoms indicated; in one case only had I occasion to repeat the bleeding on account of the spasms and gastric disorder recurring; in a few cases where slight irritability of stomach continued, after free venesection, fifteen or twenty drops of laudanum were added to the camphorated draught, but I never exceeded that quantity; and in six or seven hours after the calomel was administered, a laxative draught, composed of an infusion of senna and salts, or oil, was given to determine to the bowels and accelerate the operation of the calomel; the compound powder of jalap would have been preferred, but I had none in store; my expectation of success after adopting this line of practice was more than fulfilled, as out of twenty eight admitted and treated in this way, I only lost two, and both were rather unfavorable cases on admission, from their not applying until the disease was far advanced and pulse imperceptible; however it relieved their sufferings and prolonged their life for a longer period than those treated in the other manner, as one lived fifty hours and the other nineteen, whereas the others all died within fourteen hours after they were received into hospital; from which circumstance, I am inclined to think, that unless venesection is early and freely performed, the chances are unfavorable, but when employed in the incipient stage of the disease before the inflammation has run high, and while the pulse can be felt, it promises almost sure success. I had almost omitted to mention, that emollient clysters were frequently given, and embrocations applied to the abdomen to assist in taking off stricture, and restoring a healthy secretion from the intestines; as the physic had due effect, the burning heat in the stomach and bowels abated, and the patient was allowed to drink small quantities of warm congee, but the urgent desire for cold water was strictly prohibited, as it seldom failed to bring on a recurrence of the symptoms, if indulged in, before twenty-four hours had elapsed; as auxiliary remedies the hot-bath, stimulant, and anodyne frictions, blisters to the head and sinapisms to the feet. Cordials and the more powerful stimuli were only administered where great exhaustion and loss of vital energy existed, as in several cases, I attribute unfavourable results to too free and early a use of

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cordials and stimulants; and in no case where they were not given, have I had occasion to repent it, as I have seen many more recover of whom I could entertain but little or no hopes, without, than with, the free and repeated use of cordials and stimulants; and even in those cases where extreme lowness approaching to death took place, I ascribe more success to external stimulants, frictions and clysters frequently repeated than to the other plan, and I trusted entirely to diluents given internally as congee, &c. I considered it always a point of great importance to procure some alvine discharge, as soon as possible, for until the bowels were freely opened, I did not consider my patient out of danger, and the moment any thing like natural stools were rendered, I looked on my patient as out of all danger; the first stools past were generally of a black gelatinous appearance and fetid; then of a greenish hue, and afterwards they became of a natural appearance, and the patients then as rapidly recovered as they were attacked; a good deal of nicety in practice was necessary to guide the patient through this intricate passage, being often in that state of disease that requires rather to be led than driven; when the bowels remained in this deranged state small doses of calomel were given morning and evening, and a laxative draught of oil or salts and senna, occasionally, to prevent any morbid accumulation; I have now detailed at some length the symptoms and treatment I found most successful, altho' it tends but little to the elucidation of the causes or cure of this dreadful malady which still remains veiled in darkness; I regret not being able to gain permission from the friends of the deceased to inspect the bodies, therefore, cannot give any account of the morbid appearances, but, should I be able to make any advances towards a discovery of the cure or cause of this disease, or trace it as endemic or contagious as some of my professional brethren seem to think it is; I shall have great pleasure in submitting my ideas on the subject to your consideration at a future period, when I am less busily employed than I am at present, with other important professional duties.

Asst. Surg. R. Neilson, Mundlesair, 1st December 1819.

The Spasmodic Cholera appeared in the Corps on the 17th ultimo, and from that date till the 30th ultimo, twenty four cases have occurred. Nine cases of it have perfectly recovered, and nine remain in hospital, the men having no complaint except weakness. I regret six cases of it have terminated fatally.

In the treatment I adhered to the former plan with the ten patients first admitted, exhibiting large and repeated doses of laudanum, and using the other means recommended. Four of these patients died; but two were brought to the hospital in a hopeless state, the disease being far advanced, and they survived only about four hours.

I had been informed that emetics had been used in the Spasmodic Cholera with advantage, and I gave them a trial, the result of which was very satisfactory. The solution of tartris antimonii, two grains in an ounce of water, was given in half ounce doses every half hour, till free vomiting was produced, and it was encouraged by copious draughts of warm water. The whitish watery matter was at first ejected from the stomach, but the operation of the emetic being promoted, some bile was brought off; and the stools, which had continued whitish and watery, gradually assumed a bilious, or rather, a more natural appearance, and a better consistence. As a strong determination takes place to the surface from the operation of the emetic, it thereby produced very beneficial effects. In the body, and particularly, the extremities, which had felt cold and chilly, the circulation and natural heat were soon restored; and the pulse, which had been very feeble, or scarcely perceptible, became regular and distinct.

With the view also of encouraging the natural heat, fomentations, and hot applications to the feet were used; and, if there was pain of the epigastrium, a blister was applied. When the patient had felt relieved after the operation of the emetic, the solution was repeated in smaller doses every hour to produce a constant nausea, and keep up the determination to the surface: it also produced some loose stools--- small nauseating doses were continued for several hours, and until the unfavourable symptoms had disappeared. The following morning a purgative was given, of jalap and calomel, or salts and senna, which produced several loose and natural stools; and the patient felt free from complaint, except weakness.

ASST. SURG. R. NEILSON, MUNDLESAIR, 1ST DECEMBER 1819.

Fourteen patients were treated in the manner I have described---Of these, three have been discharged, two have died, and nine are recovering favourably.---The two unfavourable cases were admitted in an advanced stage, and were much exhausted.

With reference to these few cases, I am of opinion that, emetics may be exhibited in the early stage of Spasmodic Cholera with the best effects.

" I have lately seen in two cases that the emetic did not succeed, and I was obliged to use the laudanum which effected the cure.---I cannot therefore speak at present with much confidence of emetics ; further experience must decide."

16TH AUGUST 1820.

I LAMENT having to report that the epidemic has appeared in this camp. Seven of the followers have been attacked with it since the evening of the 18th instant, and a Serjeant of the Flank Battalion has been seized with it to-day. The disorder terminated fatally in the first three cases which came under my care, but in three others has yielded under the treatment I have recommended to the medical officers of the force. In the two first cases I employed laudanum, wine, spirits, stimulating frictions, and general fomentations. The first of these, a cooly, after going out nine or ten miles to the jungle and returning towards evening was seized with a looseness and in the middle of the night with a severe vomiting and purging, When brought to the hospital early in the morning he was suffering under the usual signs of the disorder, and died in about three hours. The second, a dooley bearer, was taken under treatment in less than two hours after the attack, and died in about twenty two hours from the beginning of the disorder. In this case, delirium and stupor were induced early in the complaint by the quantity of laudanum given, but no natural sleep ; the cramps, as in all the other cases, and the pain and burning sensation in the bowels were relieved in about an hour by stimulating frictions and fomentations; the first dose of laudanum was rejected, but afterwards there was little or no vomiting ; but the stools, though not very frequent, were passed involuntarily, and for some hours before death, from being like limpid water mixed with the slime of the stomach and bowels, and here and there very minute specks of blood, and sometimes consisting of the undigested contents of the stomach, became first of a dirty, and gradually afterwards of a dark brown colour and tinged with blood, and during the last six or eight hours were putrid. This man took sixteen ounces of arrack given either with congee, or alone, and three hundred and sixty drops of laudanum. From the putrid and bloody appearance of the evacuations before death in this case, I apprehended that the bowels were inflamed, as pointed out in Mr. Corbyn's letter, and obstructed, and in the third case I changed the treatment. The patient had been ill seven or eight hours and was advanced in years ; but was of a strong habit, and had not lost the pulse at the wrist when he was brought to the hospital. He was of the malabar cast and employed in the provision department. He took one scruple of calomel and the same quantity of Dover's powder, and repeated the dose in about four hours ; and the spasms and pains were relieved by frictions with a paste of garlic and chilly powder beat together, and by hot fomentations continued for about two hours over the trunk and limbs by means of cumlies. He had but very little vomiting and only three or four stools, and when covered up in dry cumlies after the fomentations, was tranquil and dozed, but had no sound sleep. In the evening he was ordered half an ounce of castor oil every second hour till natural stools were procured, or the oil appeared in his evacuations. He

STAFF SURGEON J. SCARMAN, DOOAB, 18TH AUGUST 1818.

Staff Surgeon J. Scarman, Dooab, 18th August 1818.

continued tranquil and dozing; his stomach rejected two doses of the oil, but none passed by the bowels, and he had only two stools in the course of the night, which were of limpid water, mixed with slime and minute specks of blood: he had before, passed through his bowels, undigested dhal and rice. On the following day he took a scruple of calomel and the same quantity of ipecacuanha every four hours, and occasionally thick congee. He continued in nearly the same state, free from pain and dozing, but died the next morning; his stools, as in the other case, becoming involuntary, of a dark brown colour, tinged with blood, and putrid. The fourth case, a young woman, had been ill seven, or nine hours when brought to the hospital at four o'clock in the morning, but her pulse was perceptible at the wrist. She was prescribed the calomel and ipecacuanha, of each a scruple every four hours, and after being relieved from the pain and heat of the bowels and the spasms in the extremities by the frictions and fomentations, was covered up in dry cumlies and fell into a sound sleep. She had very little vomiting, only once or twice rejecting the warm congee which was given in very small quantities to allay thirst, and she had only two or three discharges of limpid fluid, with slime and undigested rice, from the bowels, and those within the first hour or two of her arrival at the hospital. In the evening she was prescribed the castor oil, as in the former case, which remained on her stomach, and had not any effect on the bowels. She slept well, and had one small stool in the night of limpid fluid and slime without pain. The following day she took one dose of the calomel and ipecacuanha and eat thick congee, she continued free from pain, and had a sensation of hunger, but one or two evacuations she had in the course of the day were of the same appearance as before. The next morning four grains of calomel and twelve of jalap were given, and she had two or three small stools af a transparent watery fluid deeply tinged with bile. The next case, a Puckally, had been ill four hours, he was unable to stand or speak, his countenance was sunk, his eyes heavy and very dull, his pulse imperceptible at the wrist, his temperature in the axilla 96°, his respiration short and quick, and he was suffering under the inquietude of agony. The calomel and ipecacuanha were ordered every four hours; the frictions and fomentations relieved him from pain and spasms in less than an hour; after using fomentations half an hour a thermometer placed in the axilla rose slowly to 102½°, a branch of the temporal artery beating 120 in a minute, but the surface of the body and limbs continued below the natural temperature to the feeling of another person when the fomentations were omitted for a short time. When covered up in warm cumlies he was tranquil and dozed, but did not sleep. He vomitted two or three times the congee given in the course of the day, and had only two or three of the epidemic stools. In the evening his temperature was 101° and the pulse at the temple 96, but very weak, and his skin felt cold but not clammy. He dozed but had no sleep in the night, and he vomited once or twice and had one or two of the same kind of stools. In the morning his temperature was 97°, the temporal artery continued to pulsate 96 in a minute, his senses were more impaired, and he appeared much weaker; one hundred drops of laudanum were given with a dose of the calomel and ipecacuanha, which were repeated every eight hours, and he was ordered thick congee for food. He soon after fell into a sound sleep, and towards evening had an evacuation from his bowels, seemingly of congee slightly tinged with bile. In the evening the pulse had returned at the wrist but was too feeble to be counted, at the temple it was at 90, and his temperature was at 98°. He is now taking bark and wine to restore his strength. The sixth case, a young woman, had the calomel and ipecacuanha along with one hundred drops of laudanum, and after using the frictions and fomentations fell asleep. She was admitted in the forenoon and was perfectly relieved by one dose of the medicine. On the following morning she took four grains of calomel and twelve of jalap, and had three stools, the first resembling the epidemic evacuations, but the others of the consistence of thick congee and of a lead colour. The seventh, a girl about twelve years of age admitted to day, has been treated like the last and though apparently relieved, does not sleep.

Staff Surgeon J. Scarman, Dooab, 18th August 1818.

The disorder has appeared in this Camp while a strong wind prevails from the southwest, with heavy clouds and rain. It has not yet appeared in Hoobly nor in any of the villages in this part of the Dooab, and no people have arrived in Camp from the country in which the disease is raging north of the Kistnah.

It seems to originate in a sudden atony of the whole system, and to be cured by stimuli applied suddenly, and in sufficient quantity to restore healthy excitement, natural sleep however induced being the first symptom of recovery; and the return of the secretion of bile, depending seemingly on the introduction of food into the stomach, after the powers of digestion in common with the other natural functions have been restored, rather than on any specific influence of the mercury on the function of the liver. The calomel and ipecacuanha are employed to allay the irritation in the bowels, and to check the watery discharges which so remarkably depress the vital powers, and a very large dose of opium is combined with them with the same intention, and to produce such an impression on the system as will restore healthy excitement and natural sleep.

Actg. Surgeon A. Millar, August 1818.

On the 18th day of August the epidemic found its way in to the lines of H. M. Flank Battalion, and I have annexed a table to show its daily progress in the Battalion, and its Camp followers, which I hope may prove agreeable to the Medical Board.

This epidemic attacks suddenly with a watery purging, and vomiting, with acute pain at the stomach, dreadful spasms of the feet, legs, thighs, and abdomen, with great prostration of strength ; as the disease advances, the body becomes purple like the body of a person recently drowned, no pulse to be felt, the countenance and eyes sunk, and death terminates the scene.

Every thing seems here to depend upon the early use of medicine, and perhaps no disease is so easily overcome when taken at the outset, but the very reverse is the case when neglected even for a few hours.

The patients when admitted took twenty grains of calomel and two hundred drops of laudanum ; were well fomented, and bled till faint ; when the disease had made but little progress, the patients, under this treatment, generally fell into a sound sleep, and awoke free from complaint ; but when the disease had been of longer standing, the stomach often rejected the medicine which was repeated again and again, but without procuring sleep; blood letting had the most commanding influence over the spasms, and when the disease was taken at an early period, was almost always effectual, but when the disease had gone on for six or eight hours, and the skin had become purple, little blood could be obtained, and what was obtained was of a dark colour, and appeared to have lost its usual texture.

During the prevalence of this epidemic, patients in hospital with dysentery were taken with this disease, and the symptoms of dysentery disappeared while under the influence of the epidemic ; the dysenteric symptoms returned after the epidemic had been cured, and were more unmanageable than before.

At the time when this epidemic prevailed most, the weather was wet, rain falling every day, keeping the ground and atmosphere constantly damp, the thermometer in the shade was from 70 to 74.

Actg. Surgeon A. Millar, August 1818.

Progress *of the* **Epidemic** *in His Majesty's Flank Battalion from the* 18*th to* 31*st August* 1818.

Days.	Admitted.			Died.			Dismissed as recovered.		
	Europeans.	Natives.	Total.	Europeans.	Natives.	Total.	Europeans.	Natives.	Total.
18th	3	1	4	1	1	2	0	0	0
19th	9	5	14	2	2	4	0	0	0
20th	15	2	17	2	0	2	0	1	1
21st	10	3	13	2	0	2	0	0	0
22d	9	4	13	0	1	1	0	0	0
23d	11	2	13	3	1	4	0	0	0
24th	29	0	29	6	0	6	0	0	0
25th	26	4	30	3	2	5	0	0	0
26th	19	5	24	6	2	8	0	0	0
27th	10	1	11	5	1	6	0	0	0
28th	10	1	11	3	0	3	33	0	33
29th	9	1	10	3	2	5	3	0	3
30th	3	1	4	0	0	0	6	17	23
31st	3	3	6	1	1	2	9	0	9
Total ..	166	33	199	37	13	50	51	18	69

Asst. Surgeon J. Cox, Badamy, 5th September 1818.

The first of the Epidemic which I saw was at Bagracottah on the morning of the 23d; the man had been in hospital about an hour previous to my seeing him, and had laboured under the disease for three or four, previous to his reporting himself to Lieutenant Marklove, Commanding Bagracottah, who immediately on seeing him, gave him 40 drops of laudanum; about an hour after his taking it, I arrived and was informed of the case. I found him in an extremely reduced state, countenance sunk and ghastly, skin covered with cold perspiration, pulse scarcely perceptible, insensible when spoken to, unless roused, and all the appearances of approaching dissolution. Vomiting and purging frequently, stools watery, and from the stomach, what he had just taken—spasms of the lower extremities particularly; from such alarming symptoms and in so short a period as four hours, from the attack, I had little hope of a recovery—I immediately gave him a scruple of calomel, and washed it down with warm brandy and water, friction with warm dry cloths to the whole surface of the body, with bottles of warm water to the feet, hands and abdomen, with a couple of large charcoal fires to make the room, in which he was, as warm as possible. The brandy and water remained on the stomach about half an hour; I then gave him the following draught.

Magn. Alb. ʒss
Tinct. opi. gtts. xl.

Spts. Ammon C. gtts xx. mixed with a small quantity of warm congee, which remained for some time on the stomach—watery stools continued; warm congee water, and pepper water, were alternately given in small draughts to relieve the urgent thirst, and he very frequently asked for cold water; at noon continued nearly the same; if any thing more tranquil; the draught of magnesia, laudanum, &c. with 15 grains of calomel—skin cold, pulse not raised, stools still watery, frictions and warm bottles repeated—spasms increased, he continued gradually sinking until 6 p. m when he expired, having suffered about 14 hours. He was a young man about 22, small stature and delicate.

Asst. Surgeon J. Cox, Badamy, 5th September 1818.

At noon on the same day, Seyd Ally a Jemadar, rather an old man near 50—was seized and had been ill two hours previous to his applying; by this time, reports came rapidly in, of villagers being suddenly seized and that two or three had died during the morning, and some on the preceding day—at 2 P. M. another sepoy brought into hospital; was just seized with purging, with which they were all attacked first, making the third man on this day—in the two present cases the symptoms were not so alarmingly severe as in the first, from 15 to 20 grains of calomel was immediately given them and washed down by 40 drops of laudanum and spts of ammonia. Friction and warm bottles of water kept constantly applied—notwithstanding every exertion they became cold and suffered from spasms, particularly the Jemadar; the sickness and purging continued more or less till midnight, when they appeared tranquil with a degree of warmth over the surface of the body, lower extremities less affected with spasms, the calomel, and draught, were given at 8 o'clock, and the draught repeated again at 10 o'clock, having thrown up the former ones—in these cases the countenance soon became much altered and sunk—towards morning a very evident improvement was observable in appearance and symptoms, no sickness, passed an evacuation small and slimy, with tenesmus; at 8 A. M. an ounce of castor oil was given to each of them and had the desired effect in producing stools more copious, slimy, and tinged with bile—complain of great debility and soreness over the whole body---friction repeated occasionally, with a warm and nourishing diet, at bed time 5 grains of calomel given to each.

In the course of the night an express reached me saying a sepoy had just been seized at Badamy---I visited the two men and found them doing well, debility and general soreness their only complaints---at day light I left them for Badamy, where I had the consolation of finding the patient had laboured under a vomiting and purging of *bilious matter*, and doing well from similar treatment adopted in the former case, of simple Cholera Morbus---and the Garrison free from the epidemic; the next day a Bagracottah report arrived giving a favorable report of the two cases, and another sepoy attacked; with a very great increase in the pettah---on the following morning I again went to Bagracottah, and found the patients doing well. Debility the principal complaint, which was very great. In the last case Mr. Marklove (who had very anxiously watched over the treatment of the disease) adopted the same means with success, though the symptoms were extremely severe, the surface of the body cold, and affected with spasms—on the exhibition of the castor oil, the stools became tinged with bile. —On the 27th at 4 P. M. Futty Mahomed, a sepoy, was brought having been purged three times in about two hours, stools copious and nothing but water—had felt very well and taken his usual meal in the morning, he was a full grown man about 28. Pulse rather quickened, but strong, and natural temperature, complains of no pain or any other symptom, than having been purged 3 times—60 drops of laudanum and 30 of spts. ammon. were given him immediately, he was well wrapped up in cumlies and kept warm, in an hour after the draught, was purged once more, watery, no pain, no sickness, pulse and skin much the same, 20 grains of calomel washed down by the draught as above was now given him, in about 15 minutes he vomited a large quantity of undigested rice which he had taken in the morning, the symptoms now soon followed and most severely, he became gradually cold, pulse sinking, and by midnight was in most dreadful torture from general spasms, vomiting and purging constantly, nothing remaining on the stomach more than a few minutes; the magnesia, laudanum, and ammonia was frequently given and as frequently thrown up, about 4 in the morning of the 28th I gave him 80 drops of laudanum in a small quantity of strong brandy and water, which was thrown up three or four times, the burning heat about the stomach was very great, warm arrack and chillies were rubbed over the stomach for some time, and about 5 o'clock 100 drops of laudanum in warm brandy and water given and repeated in half an hour, with 40 drops of æther, the sickness and purging now seemed to cease, the spasms continue; at 8 A. M. 20 grains of calomel with 50 drops of laudanum and 30 of æther were given, the spasms conti-

Asst. Surgeon J. Cox, Badamy, 4th September 1818.

nue very severely, extremities covered with cold perspiration, countenance much altered, eyes dim, with the tunica conjunctiva flushed more than in any of the former cases—he continued much in this state gradually sinking until about 3 P. M. when he died after about 24 hours illness. I reproach myself for not having used blood letting in the early part of this case, and glysters had I the means of using them, but a want of syringe, or bladders and pipes prevented me. On the 29th, 30th and 31st no increase amongst the sepoys, the men doing well, the Jemadar expressing the greatest anxiety to return to his family at Badamy, notwithstanding the weak state he was in; no argument could persuade him the length of journey, was more than his strength was equal to; from the great anxiety he seemed to suffer at being away from his family I consented to his accompanying me in the morning to Badamy, having him placed in a dooly and every thing warm and comfortable around him, with some soup to take on the road which he did several times, and once a little warm wine and water—but the fatigue of a journey of near 25 miles was too much in his reduced state, he died quite exhausted during the night of the 1st of September.

Badamy, 5th.

The epidemic to this date, has only made its appearance in one instance (and that in a sepoy) at Badamy or in any of the villages between it and Bagracottah, the sepoy was taken ill on the morning of the 2d instant, vomiting and purging with a degree of coldness over the body, and pulse hurried and faint, countenance sunk; in this instance I took 10 oz. of blood away, which was done with difficulty, although two veins were opened, it flowed so very slowly; it had the good effect of preventing spasms, and the man regained his warmth by 5 o'clock in the evening and at 8 was much better; the same means were employed as to the former cases, at 10 he felt nothing but debility, and took some soup, and felt much relieved, neither sickness or vomiting since 3 o'clock, general warmth over the body, and the pulse 65. His attendants and the dresser remained with him until twelve o'clock, when they gradually fell to sleep, and on the dresser awaking about ½ past one he found the man had left the hospital, a search was made and he was not to be found in any part of the fort; at 4 o'clock this evening, his body was found floating in a large tank 150 yards from the hospital, in going to which he must have passed two gateways, and a sentry at each.

Asst. Surgeon J. Cox, Badamy in the Dooab, 20th September 1818.

SINCE my last report on the 4th instant for August, I have only had two cases, one in a poor villager at this place (Badamy) and the other in Lieut. M—— at Bagracottah—on the evening of the 7th instant I was called to the poor man in the village (about 6 P. M.) he had been labouring under the disease since the early part of the morning, and was extremely weak when I saw him, and much affected with spasms of the extremities, and muscles of the abdomen, skin cold and clammy, pulse very low, and indistinct, under such symptoms, I must acknowledge I was a sceptic on the propriety of blood-letting, but was anxious to try its effects in the first case that might present itself. I immediately gave the man 40 drops of laudanum in an ounce of warm Holland's gin, and applied warm chatties of water to the feet and friction over every part of the body, and opened two veins in the arm, and with very great difficulty got 12 ounces of blood away, I was happy to see the man did not sink under the operation, but on the contrary appeared revived and towards the end the blood came away in a stream and more florid in appearance; on opening the veins it appeared blacker than venous blood in general, and in a half coagulated state, so much so that it was only by frequent pressure upwards on the veins from the wrist that I could procure any stream at all. I remained with him an hour after the bleeding, and was pleased at seeing him no worse than when I first saw him, indeed he appeared more tranquil from spasms and the pulse if any thing better, the frictions were continued—I now gave him 15 grains of calomel and washed it down by the draught of laudanum and gin, and left my dresser with him to superintend the frictions and to repeat the draughts should he vomit the former ones up—at nine o'clock near three hours after the bleeding, he

Asst. Surg. J. Cox, Badamy, 20th September 1818.

had not been purged or sick once; entirely relieved from spasms; every part of the body felt warm, and the pulse had returned distinctly to the wrist, though faint; the friction was ordered to be continued, and some warm soup was made, similar to mulligatany, with pepper, &c. and given him to drink in small quantities during the night; on the morning of the 8th, the report was favorable; had slept a part of the night or rather towards morning; had no spasms and felt debility only; pulse increased, skin dry and warm; an ounce of ol. ricini. was given him at 8 o'clock, which in the course of the day produced three stools; the first bilious, of a dark green colour, and the others more natural; I ordered him to continue the warm soup as his diet and to take 4 grains of calomel at bed time—which was all that was done in this case. The man came to me a few evenings ago quite well, and said he had pursued his usual labour for several days past. On the night of the 14th instant about 11 o'clock, I received a note from Bagracottah saying Lieutenant M——— had been seized about noon with symptoms of the epidemic, a numbness over the extremities, the hands and arms particularly, and a general coldness over the whole body; had been purged three times since 8 o'clock in the morning, stools in the first instance natural, and the two last more watery; from such symptoms he dreaded the disease and immediately took 15 grs. of calomel and 65 drops of laudanum in strong warm brandy and water, and laid down for an hour, and had friction and hot bottles applied to the feet and hands, which relieved the symptoms, excepting the thirst which continued urgent. About 3 P. M. the symptoms again returned with greater violence; was not purged since taking the calomel, but now felt a degree of nausea; he again took 60 drops of laudanum, in warm brandy and water, and repeated the frictions and warm bottles to the feet and hands, and again regained his heat by 7 o'clock P. M.; from the last attack, he had cold clammy sweats; the warm bottles and friction were continued during the night; about 5 A. M. on the 15th I saw him; was then warm with the pulse returned to the wrist and pretty strong. I immediately took away 24 oz. of blood, which came away freely and he shortly afterwards expressed a degree of ease from the evacuation; two hours after the bleeding, passed a large dark green coloured stool, and in the course of the morning, two or three, more natural in appearance, but by no means healthy evacuations; 5 grs. of calomel were given at bed time, with 20 drops of laudanum in brandy and water—and the following morning, a solution of sulphate of magnesia in water, every two hours until the bowels were evacuated; in the course of the day the medicine operated; stools copious and more healthy; on the morning of the 17th I brought him over to Badamy, and am happy to say he is now doing well—In this case the disease was arrested in the very earliest appearance of it, and it is I think a strong proof of the beneficial effects of an early application to medicine, for not a moment was lost in the use of the laudanum---and had any one been present to have blooded Mr M———, I am of opinion, he would not have had a return of symptoms at 3 o'clock; and if repeated and constant attention had not been paid to the friction and warm draughts of brandy and water, he would in all probability have suffered much more by the determination of blood to the internal organs, the relief of which must be our principal object in the cure---I also think it matters not, at how late a period blood letting is used, if it can be in any way got to flow from the external veins, or superficial arteries; the case of the villager at Badamy is I think a strong proof in its favor. I was not a little pleased in reading your letter of the 10th instant, recommending blood letting in this most fatal disease; I received it on the morning of the 14th, and was totally at a loss how to account for its good effects in so reduced a state, to appearance, as well as to the quantity of fluid evacuated by stool and vomiting in every case, unless it is produced by obviating the determination of blood to the stomach and mesentery, whereby these organs are excited to an increased secretion of the gastric and pancreatic fluids, as well as the mucous membranes of the small intestines. On the evening of the 14th, a woman belonging to one of the sepoys came into Badamy from Bellary, was seized with the disease on the road, and had suffered about 18 hours when I saw her, and was in the most reduced state; I endeavoured to take away blood, but could not get away half an ounce from the arm. Friction, stimulants, and laudanum were administered during the night, but to no effect; she had

Asst. Surg. J. Cox, Badamy, 20th September 1818.

laboured under the disease too long; she died early on the morning of the 15th. How far the situation, climate and soil of Badamy may influence the state of health we have experienced here, for upwards of a month, since my arrival at it, I will leave you to judge from the short sketch I will offer you of its situation, &c. Badamy is situated in the middle of a chain of hills running nearly north and south about 9 or 10 miles long, in every part of it perfectly rocky, and in many places bearing the appearance of cliffs, particularly immediately about the garrison of Badamy, studded over in several places with small jungle shrubs or underwood; the soil in every part perfectly sandy, and a large piece of ground formed into enclosures immediately to the front of Badamy, extending in a S.W. and N. W. direction, forming a sort of crescent, with its radius at least 4 miles, and its boundary formed by another chain of hills; this piece of even ground is also sand, in some places red earth, and now in a full state of cultivation; the hills forming its boundary covered with thick low jungle; nor is there in any direction for 6 or 7 miles round Badamy, any other than a sandy red soil, and in many places covered with small low dry jungle. The Thermometer during the 24 hours taking a range from 76 to 86, as the extremes of heat and cold, these being the highest and lowest points it has been at since the 13th of August, but generally speaking the average range is 5 or 6 degrees a day, being in the morning at 6 o'clock 78, at 2 P. M. 84 and 8 P. M. 82; on the days of greatest heat we have generally had showers of rain; the winds during the month of August were very strong from the south south west, with dark passing clouds; and in the early part of this month, strong winds from the S. S. W.; latterly we have had a clear sky; whenever we had rain it has been in showers, rather heavy but of short duration, on the warmest days, and generally from noon until towards sun-set. The nights and mornings free from fog. The water which is generally used here is taken from a very large tank in the garrison, formed partly by nature and partly by art, has an abundant supply and of a good quality during the whole year, (by accounts from the inhabitants.) The fort of Badamy is situated rather low and in a fissure of the rock which forms an opening; at its extreme breadth, about 12 or 1400 yards, with high and abrupt rocks on each side of it, and at its smallest about 3 or 400 yards, at which part the tank is situated.

Asst. Surg. I. Stone, Darwar, 6th September 1818.

Of the sixteen cases of Spasmodic Cholera, nine were dismissed cured, one remains in hospital recovering, and six died.

To enumerate the symptoms of this disease may be superfluous, after the numerous communications and reports received on the subject, and the general uniformity of its symptoms. However, as not only the symptoms, but a detailed account of every case, and the result of the medical officer's observations and practice is required, I beg to offer what has come within mine.

The patients suffering from this disease were attacked (with few exceptions) during the night, with sudden vomiting and purging of a dirty watery congee-like matter, generally without any previous indisposition, excepting a slight head ache and langour, a very short time before the attack. No appearance of bile, great prostration of strength, and deficiency of action in the arterial system, the pulse often from the commencement not perceptible, and where it is, it is small and quick. Spasmodic cramps of the extremities, and of the muscles of the abdomen and chest, next make their appearance, varying in their violence according to the strength of the patient; (in two cases of women whom I received into hospital, from the village, the spasms were very slight, one of them recovered, and one died) and disappears mostly after from six to seven hours from the first attack.

The respiration becomes much oppressed, and often stertorous. The eyes sunk, and a deficiency of the natural lustre resembling that of a man suffering from inebriety or long watching, the eyelids generally half closed, and in the last stages, the eye becomes fixed, and sinks within its orbit.

Asst. Surg. I. Stone, Darwar, 6th September 1818.

Great anxiety prevails, with a general cold clammy feel of the body, much thirst, but I have not witnessed that paramount desire for cold drink, which has been mentioned. On the contrary, on administering grateful and warm cordials, the patients appeared to relish them much. Great restlessness at first, but after six or eight hours, he sinks into a comatose state from which it is impossible to rouse him, and which is a strong prognostic of a fatal termination. The countenance is expressive of the greatest suffering, though at the time the patient may not labour under any spasmodic action, and when questioned, did not complain of any particular pain or cause of distress. In two cases the patients complained of deafness, and in one a suppression of urine. I passed the catheter without success, and on withdrawing it I found the small holes of it clogged up, with a thick mucous matter. I did so twice or thrice with the same success. I then endeavoured to cleanse the urethra by syringing warm water, after which not more than an ounce of urine came away, though the catheter was perfectly free. The bladder appeared to be much contracted, for the catheter had no range within it; after withdrawing it, the same anxiety and distress to make water continued; I got him into a warm bath, and just as he was taken out he expired.

The patient remains collected to the last, though from debility he is unable to express himself. The disease generally terminates favorably, or otherwise, in from twelve to 24 hours. The great prostration of strength, and total want of action in the arterial system, appears to be the most alarming symptom of this disease; the vomiting and purging cease after the first few hours, either from the disease having nearly run its course, or from the effects of the medicine taken.

I have had no opportunity of seeing any Europeans suffering from this disease, and the prejudices of the natives totally precluded any elucidation which might have been derived from dissection.—As to the predisposing causes of this complaint, I have only to say, that all the men of this corps who suffered from it, were men of low cast, with the exception of two, and these two were men, who had fallen off latterly very much; from this I should conclude, that a too free, irregular, or watery diet, and an addiction to ardent spirits, thereby enervating the tone and powers of the stomach and the alimentary canal, and destroying or vitiating the natural feelings of its nerves (on whose healthy action the whole system depends), and rendering them more susceptible of disease, and more liable to be acted on from the slightest exciting cause; filth, want of warm clothing, violent affections of the mind, or an anticipation of evil, will by their effects on the sensorium and the organs of digestion, according to their nervous sensibility, predispose to this disease.

Whether it is owing to the influence which the morbid affection and diseased state of the nerves of the stomach and intestines have upon the animal economy by sympathy, that the distressing symptoms which mark this disease, is induced, I do not feel myself prepared to say---but I am much inclined to give them the credit of it, as we are all well aware, that it is owing to their healthy, or unhealthy action, that the whole system is either invigorated or enfeebled.

Regarding the exciting cause of the disease, unless it can be attributed to a morbific and deliterious state of the atmosphere, I feel at a loss how to account for it.

That this disease appears to be a violent spasmodic affection of the whole system, with nearly a total cessation of all the vital functions, is evident by the symptoms with which it is ushered in, and accompanied it in its course. The want of energy in the arterial system, and the diminished temperature of the body; the violent affection of the stomach and intestines; the spasmodic contraction of the muscles of the extremities, abdomen, and chest; the catching and stertorous

Asst. Surg. I. Stone, Darwar, 6th September 1818.

kind of respiration ; the great oppression of the sensorium and precordia ; deafness, and suppression of urine, either from a deficiency in the secretory powers of the vessels of those organs, or a spasmodic contraction of the ureters (and which was the more remarkable, as in the case which I had, considerable thirst prevailed and was gratified) all tend to demonstrate the source of this malady.

That the langour, and indeed almost sudden cessation of power in the vascular system, depends on its consent and sympathy with the general morbid derangement of the whole nervous system, I am inclined to believe : as a strong and full pulse is accounted for by the power the ventricles possess to give free and forcible circulation to the sanguiferous fluid, so the weak and almost imperceptible one which marks this complaint, may be owing to a deficiency of that power, and an irritability is excited which makes the ventricles contract before they receive their healthy and usual stimulus.

The pulse in this disease marks at once (I think) the absence of any inflammatory action ; in the former, it is soft and small at first, and as the disease advances, it totally dies away. Where inflammation exists, it is hard, full, and contracted ; and the heat of the surface of the body present in inflammation, is totally wanted here---In addition to these, on the exhibition of wine, cordials and opium, (all of which are certainly inadmissible in inflammation,) if not too late, the effects from them are most beneficial and happy.

The influence which the stomach has over the head, in common with the heart, diaphragm, kidneys and lungs, renders an explanation of almost every symptom in this disease, easy---The affection of the sensorium in consent with the universal derangement which prevails, I think, may be from a distension of some of the large vessels of the brain---owing to the irritability and spasms of its smaller and minuter vessels, rendering them incapable of performing, or carrying on their natural and healthy actions.

The general intention of cure of this Epidemic, on a careful attention to its symptoms, at once suggests itself. To overcome the violent spasmodic action of the stomach, intestines, &c. To support and prevent that rapid sinking which takes place ; to restore the functions of the alimentary canal, and to relieve the oppression of the sensorium.

The best and first remedy, (when administered in time) which I have found to answer the first intention of cure, is opium. It overcomes the morbid sensibility and violent action of the whole nervous system, and quiets all uneasy sensations.

I have given it from sixty to one hundred and twenty drops at a time, joined with essence of peppermint, sp. lavend. c. and warm brandy. And in those who were received into hospital within the time which gave it a fair trial, I have always found it successful.

I do not feel satisfied of giving the large and *repeated* doses of calomel which have been recommended : I think the marks of slight inflammation which have been observed on dissection, may have been the consequence of a too free use of it.

I gave ten grains with the first dose of the opiate, and if that is rejected, I rest my hopes of success *entirely* on the good effects of the opium, and other remedies, *without* the calomel.

If the patient is strong, young and plethoric, if his pulse is at all perceptible, I bleed him, nearly ad deliquium, as I find that preceding the use of opium by venesection, which by emptying the vessels, produces general relaxation, removes the spasmodic and convulsive action, and thereby renders its success more certain : and may obviate the unpleasant and bad effects which opium has on many constitutions.

Asst. Surg.
I. Stone,
Darwar,
5th September
1818.

As the deficiency of natural heat in this disease, proceeds from a diminished or an obstructed circulation, owing to the diminished force of the heart, and a spasmodic action of the smaller arteries and minuter vessels; here, if the patient comes in time, the lancet is a powerful means of removing that contraction, and restoring the circulation and natural warmth.

The warm medicated baths, and fomentations are of the most important service; they assist the languid circulation by relaxing, with an agreeable sensation, the muscles and minuter vessels; it often gives immediate relief, and has a most soothing effect; it should be often repeated, and not continued longer each time, than from five to six minutes. Even in those cases that terminated fatally, it never failed to afford them some relief; the temperature of it should not be under a hundred.

Frictions also excite the action, and promote the circulation in the capillary vessels.

Anodine enemas thrown up, also, principally contribute, to allay the great excitement in the intestinal canal.

Opiates must be given here in large doses, and repeated without taking into consideration the quantity given, but according to the urgency of the case. It is on it we must principally depend, for nothing gives so sudden, or sensible relief.

In addition to opium, I have used other medicines which are useful in spasmodic affections; I find them productive of much good effect; as camphor, and æther. Stimulating frictions and blisters to the abdomen should not be delayed if the symptoms are urgent, and cataplasms to the feet. And to relieve the head, either opening the temporal artery or jugular vein, with blisters, is particularly indicated.

To answer the second intention of cure, to "support and prevent the rapid sinking," I used warm medicated cordials, warm wine and water with spices, and warm brandy and water.

To answer the third intention of relief, "to restore the functions of the primæ viæ," I gave warm purgative tinctures, or jalap with calomel, washed down with some warm spiced liquid. I did not repeat the calomel after the first dose, for the reasons I have before mentioned, nor did I use any cathartics, until I perceived the opium and other remedies had produced the desired effect. After which the bowels were freed in the manner above mentioned.

The after treatment of this disease requires but a little care and attention to prevent a relapse, and to ensure recovery.

Surgeon A.
Colclough
Camp near
Gudduck,
1st May
1819.

On joining the detachment with this force from Seroor on the 14th instant, the number in hospital were twelve, and no serious case of disease. On the 14th, and morning of the 15th, several cases of Epidemic Cholera occurred among the native followers and servants, and on the afternoon of that day, one case, that of Corporal Phipps, occurred among the dragoons; no other appeared till the 18th, when William Heeps was attacked; on the 19th there were ten admissions; 20th seven; 21st three; 22d three; 23d three; 24th two; 25th two; and on the 26th one, that of John Handy which has been the last among the Europeans. The disease remained a day or two later with our followers, but no case of any description has occurred for the last two days. I have fully reported four cases in the journal, which clearly point out the symptoms and rapidity of the disease, and method of cure resorted to; I have also given the most interesting case of dissection that occurred, and in which the stomach and bowels were in a remarkable degree deprived of their natural mucous lining; in two other cases inspected, Sells and Melville, not the least diseased appearance could be detected in the abdominal viscera, and time would not admit of examining the head; in the case

Surgeon A. Colclough
Camp near Gudduck,
1st May
1818.

of Serjeant Cooke, who perfectly recovered the first attack of the disease (though he had been perfectly insensible, and without pulse at the wrist for nearly 36 hours), but subsequently died on the 6th day, with apoplectic symptoms a few hours before his death, I found the vessels of the brain much distended, but no more than the usual quantity of water in the ventricles; the contents of the abdomen natural.

In very few cases indeed were spasms present, and even these in rather a slight degree; in those, I tried bleeding, and I think with bad effect, as they appeared to sink more rapidly after it. The most vital consequence appears in early reporting; in all cases that came within an hour or two, and had but one or two watery stools, and before sickness of stomach came on, the first dose of calomel and laudanum generally brought the disease to a managable state, and sometimes effected a cure---in more protracted cases, and where sickness of stomach was urgent, the application of a blister, and glysters containing half an ounce of laudanum was the principal resource, checking the purging, and also enabling the stomach to retain medicine.

Mulled port, and brandy and water, was of the greatest benefit in that extreme debilitated state that occurred so quickly in cases not reported early, and brought many through, who were covered with cold sweats, and whose pulse was not perceptible for some hours.

In two thirds of the recovered, bleeding was necessary from after the first 24 hours, to the third day, as their eyes were generally suffused, and a confusion of head; their strength improved quickly after.

Purgatives were also employed under similar circumstances, and these were always necessary to bring the bowels to a proper state.

Staff Surgeon T.
Trotter,
Dooab,
9th June
1819.

The appearance the epidemic put on amongst the Europeans has been so ably detailed by Mr. Surgeon Colclough as to leave me nothing to say; in the return for the 4th N. I. I have given a sketch of it as it appeared in that Corps, as well as the detachments that accompanied it; I have there observed that deafness was a common, and generally a fatal symptom; in one case, a follower, who expired half an hour after passing one watery stool, the deafness had been present for several hours, but did not prevent him from going about his usual occupations; several patients complained of intolerable noise; in the case of Mr. Assistant Surgeon H ——— he thought the whole of the tom toms in Camp were beating close to his tent.

Staff Surgeon T.
Trotter,
Camp near
Gudduck,
1st May
1819.

On taking charge of the 2d Battalion 4th Regiment, Detachment of Artillery, Battalion of Pioneers, &c. at Darwar on the 9th of April, I found that two fatal cases of the Spasmodic Cholera had taken place in the Battalion of the 4th Regiment. On the 11th we marched to Hoobly, where the disease was prevalent; on the 12th to Benwarra, a village which had until the last four days remained untouched by this dreadful disease; the day before our arrival 12 deaths took place, and 25 had been taken ill this morning. On the 15th we joined the Head Quarters of the Force and found a few straggling cases had occurred; from this period it gradually increased for some days, and afterwards declined in the same way.

The cases were in general unattended with spasms, or vomiting; the patient sinks immediately after one or two watery stools; in these cases hot spirits with spices, and the application of heat proved of most use; the purging was always stopped in a short time by the anodyne injections; so great a repugnance had the natives to bleeding that it was a conisderable time before I could prevail upon them to adopt it, and not until several fatal cases had happened; the first man on which it was tried, was looked upon by his friends as being completely

Staff Surgeon T. Trotter, Camp near Gedduck, 1st May 1819.

out of the reach of medicine; they were therefore highly surprized at the good effects of it, especially when out of the next ten that were bled, not a case terminated fatally; a few were bled at an advanced period of the disease, but it appeared to hasten their dissolution.

As it appeared with greater severity in this Corps, a list of the admissions is subjoined.

April 11th	2
„ 12th	1
„ 13th	4
„ 14th	3
„ 15th	3
„ 16th	8
„ 17th	15
„ 18th	7
„ 19th	19
„ 20th	1
„ 21st	1
„ 22d	1
Total	65

There being no dresser with the corps, the one belonging to the Pioneers attended; he was attacked with the epidemic, when the Sub-Assistant relieved him; but having too much to do, and being also attacked with the disease, it may be inferred that had more assistance been at hand the mortality might not have been so great. In this corps, as well as the pioneers, deafness was a common, and very often, a fatal symptom.

Supg. Surg. J. Duncan, Bellary, 24th September 1818.

I have the honor to report for the information of the Medical Board, that the Spasmodic Cholera reached Bellary on the 17th instant.

On the 18th and 19th, three men of His Majesty's 84th Regiment were brought into hospital with well marked symptoms of the Spasmodic Cholera; slight vomiting and purging of white watery fluid, great anxiety and depression of spirits, with severe spasms of the extremities, nails black, countenance sunk and livid, eyes glassy. The usual remedies of tinct. opii. and calomel with cordials were administered to three men soon after the attack; strong rubifacient liniment was well rubbed over the stomach, abdomen, and extremities, while the warm bath was preparing; into which, the patients were afterwards placed for five minutes, then taken out, well dried, and placed on their cotts, and covered with blankets. The spasms which were severe at the commencement, continued, but with less violence after being put into bed, the heat left the external parts, and the extremities, and was succeeded rapidly by cold clammy sweats, the pulse rarely perceptible. The first or second doses of the tinct. opii. and calomel generally relieved the vomiting and purging; cordial medicines with warm wine, spirits, and water were given occasionally, but all without the smallest good effect, as the heat by all these means could not be restored to the surface and extremities, and these three patients died, exhausted, soon after. Blisters were likewise early applied over the stomach in all these men; and an injection with laudanum in conjee water, which was retained.

On dissection of the two last men, in presence of Mr. Owen, Mr. M'Laine, Mr. Orton and myself, the appearances were nearly the same in both; the gall bladder was distended with viscid bile, of the colour and consistence of treacle—no appearance of disease in the stomach, which contained nothing but the wine, &c. and the calomel diffused over the internal coat—not a particle of bile could be traced into the duodenum, or any of the intestines. They only contained a small quantity of white fluid, resembling soogee and water. The cystic duct

Supg. Surg. J. Duncan, Bellary, 24th September 1818.

appeared obstructed, and contracted by spasm. In fact, the stomach appears to have been completely paralysed, and incapable of performing its functions. The heart had its natural appearance, but in both men the lungs were inflamed and greatly surcharged with blood, which will account for the great anxiety and oppression of the chest, which made them uneasy under the trifling weight of a single cumly. The result of these three unfortunate cases, gave us but little hopes of combating the disease in Europeans, by opiates, calomel, and cordinals, however promptly and judiciously administered; we were therefore of opinion that bleeding was the only probable remedy to be employed in this disease, by relieving the internal parts from the great congestion of blood, and subsequent spasms; on the 21st and 22d, two men of the 84th were admitted into hospital with Spasmodic Cholera, well marked and severe. Both these men were bled freely on their first arrival in hospital, which greatly relieved the spasms, the pulse becoming soft and regular after the bleeding. Cordial mixtures were then given, with warm fomentations and glysters, after which, calomel with mistur. camph. and spir. ammon. aromat. were occasionally administered, and both these men are now in a convalescent state. Two Artillerymen were brought into hospital on the 18th instant with Cholera, who were both relieved by calomel and opium, but one of them was not considered out of danger until his mouth was affected with mercury, and his bowels relieved by a natural secretion of bile.

I regret it is not at present in my power to send you a detail of those cases in the 84th Regiment, as Mr. M'Laine, the acting Surgeon of the Regiment, has been incapable of making them out, having been for some time past much indisposed, and without a medical assistant, until within these few days, when Mr. Orton, one of the assistants of the 34th Regiment was directed to afford medical aid during Mr. M'Laine's indisposition His Majesty's 34th Regiment left Bellary for Bangalore on the 17th instant, so that I hope their removal will be the means of relieving them for a time from this pestilence. I have in communication with Mr. Nesbett, the acting collector, established an hospital in the Fort of Bellary and one in the pettah for the admission of natives attacked with Cholera, under the superintenddence of Mr. Owen; and one at the head of the Cowl Bazar for the native inhabitants there, under the inspection and superintendence of Mr. Assistant Surgeon Stevenson of the 3d Native Infantry; Mr. Nesbett has been most indefatigable and attentive in procuring every article required for the accommodation and treatment of the native inhabitants, and has translated short directions for the cure and treatment of the disease into the different languages of the country which have been distributed to the villages under his collectorship. Several cases of Cholera occurred in the Cowl Bazar and Fort, which Mr. Owen informs me have yielded to the opium and calomel practice, when taken in time; some cases had proved fatal, from too long delay in applying for relief. I find the old inhabitants of Bellary are acquainted with this disease, and inform me it raged here about 30 years ago with great violence—This was succeeded by a famine for want of inhabitants to cultivate the country.

25*th.*

P. S. I have just seen five men of the 84th Regiment brought into hospital with the Spasmodic Cholera, all of them were immediately bled, and a cordial draught given them of aromatic tincture of ammonia in camphor mixture; four of them are now asleep with the pulse full and equal. The fifth man is in a restless doubtful state, having been ill for some hours; no more than 14 ounces of blood could be taken from both arms, dark and thick. His skin cold, his face sunk and livid, the pulse not perceptible, and he has the appearance of a person labouring under epilepsy, apoplexy or strangulation. His restlessness prevented the application of leeches; cordial mixture with tinct. opii was frequently given to induce sleep, which is the first symptom of recovery.

Supg. Surg. J. Duncan, Bellary, 13th October 1818.

Mr. M'Laine of H. M. 84th Regiment, has given in his journal a selection of the worst cases of Cholera, with the appearances on dissection of those men who died of this disease, and which decided our future practice at this station. I am happy in being able to state that the practice of bleeding in the Spasmodic Cholera has been in general successful, both with Europeans and Natives, when early performed, and more particularly when accompanied by spasms, which it immediately relieves, producing from 6 to 12 hours sound sleep, when cordials and stimulant medicines, with calomel and other purgatives are given with the best effect, in relieving the torpid state of the stomach and bowels, which in some cases is very obstinate.

I have also much pleasure in transmitting remarks on the Cholera, from Mr. Assistant Surgeon Orton of H. M. 34th Regiment, who appears to have paid much attention to this disease ever since it reached Bellary. Mr. Orton's remarks, it appears from his letter accompanying them, were drawn up for the purpose of being printed in one of the weekly papers; but they have swelled to such an extent, as to form a small treatise, interspersed with many new theoretical and practical remarks, which he now requests may be laid before the Medical Board for their consideration; and I shall be happy if they meet with a favorable reception, as tending to promote enquiry among professional men, regarding this new and alarming disease, which has threatened the destruction of the European and Native population in India.

The native inhabitants at this station have not suffered greatly from the Cholera, native doctors with medicines having been stationed in the Fort, Pettah and Cowl bazar, to afford immediate assistance to those attacked with the disease, as they are greatly averse to being carried to the pandals and houses appropriated for their reception. The disease has been more prevalent in the fort of Bellary, than in any other place outside. This I attribute to the confined and crowded state of the lower fort, where the soldiers barracks are surrounded with native huts and houses, affording at all times great facility to the introduction of arrack and diseased women, to the great injury of the European soldier.

Twenty-nine men of H M 's 84th Regiment were admitted with Cholera last month, of whom 5 died; and of the European Artillery 8 were admitted, and one man, a Serjeant, died. There have been many cases of European and Native women belonging to the soldiers in the fort; but few children have been attacked with the disease. I have observed that both in the European and Sepoy hospitals, the attack of Cholera has been more confined to elderly than young people; and this I am told is also the case among the native inhabitants. The Cholera has now reached Gooty; and is travelling on the high road to Cuddapah and Madras. There is much difference of opinion here, whether the Spasmodic Cholera is infectious; causa latet, vis est notissima, there is one fact certain; that H. M. 34th Regiment carried it with them from Bellary to Nundydroog, and that there was no trace of the disease in any village on the road; since the Regiment passed, every village on that road has been attacked with Cholera. An hospital servant of the 84th Regiment had lately a severe attack of Cholera, and was cured by bleeding.

P. S.—There has been no admissions with Cholera in the European hospitals for seven days past; and the last cases admitted were of a milder form, free from spasms, and did not require bleeding.

Asst. Surg. R. Orton, H. M. 34th Regiment, Bellary, 8th October 1818.

I conceive it is in some meaure incumbent on every medical man who has an opportunity of observing the singularly obscure and interesting disease which is now prevailing to a very great extent in this country, to add his mite to the scanty stock of general information concerning it. It is no less the duty of the profession to encourage a spirit of speculation and enquiry into its nature and causes, and to receive with indulgence such attempts. Actuated by these senti-

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ments I have thrown together the following remarks, and do myself the honor of presenting them to the Medical Board.

I examined the appearances on dissection of the three first fatal cases of Cholera I met with, Europeans, who died since the 17th ultimo, and found them as follows:

1st. Extreme de-oxygenation of the blood; as was evident from the blue colour of the bodies, almost resembling that of those subjects who have mal-conformation of the heart, such as to prevent the blood from circulating thro' the lungs in its proper quantity; and from the black colour of the blood at the left side of the heart itself.

2d. Complete absence of bile from the intestines; which contained for the most part, only a small quantity of matter resembling soogee tinged with milk.

3d. The gall bladder containing the usual quantity of bile, which flowed readily into the intestine on being pressed upon. No accumulation of bile in the bile vessels or ducts.

4th. Nearly all the viscera, but particularly the lungs and intestines, surcharged with blood; which had almost entirely left the surface and extremities.

5th. Much suffusion of the intestines, and partly of the stomach, bearing the appearance of inflammation.

6th. The stomach containing the calomel and other medicines and cordials which had been given, little altered either in appearance or smell. Indeed it was the opinion of four medical officers, who were present at both the treatment and dissection of these cases, that the stomach and intestines had become paralysed, and entirely lost their motion and powers, for some time before death, i. e. from the time when the vomiting and purging ceased.

In endeavouring to account for the absence of bile from the intestines, this question naturally presents itself: Is it from its passage into the duodenum being obstructed, or from its secretion not taking place? Appearances were clearly in favour of the latter opinion, and this immediately led to the enquiry, *are the other secretions also suppressed?* The bladders had not been examined, but it appeared upon enquiry that only one of them had been observed to make water during their illness, and this in very small quantity; and since my attention has been directed to this point, I have discovered that the suppression of urine is no less remarkable than that of bile; for though in many slight and incipient cases, I have observed urine to be passed, even when there was no trace of bile in the stools, invariably after the symptoms becoming completely formed, they never pass a drop until the favorable crisis appears; as I have ascertained in eleven cases.

Of five more fatal cases, four were strictly attended to in this respect, and the above result obtained. On dissection the bladders of all five were found contracted to a very small size, containing not even a trace of urine, but a small quantity of whitish mucus. A similar substance was found in the ureters.

Similar appearances may be observed among the other secretions in this disease. The patients often complain of great dryness of the mouth; and the extreme, and as they express it "choking" thirst which is characteristic of this disease, strongly argues a want of secretion of the saliva. Blisters are found not to produce a drop of any kind of discharge in the latter stages and worst cases, though the usual inflammation follows them, causing the cuticle to be thrown off.

The only symptom that appears at all to argue against this generalisation is the watery discharges from the intestines which occur. But they always disappear, together with the vomiting, in the most advanced stages of the disease; and then the alimentary canal becomes torpid, as well as the liver and kidneys.

It cannot be objected that there is some difference in the time of the disappearance of the different secretions ; for from the extreme difference in their nature and importance, much uniformity cannot be expected amongst them. The circumstance of bile being the first to disappear, and its suppression being the most remarkable, appears to admit of an easy explanation from its secretion being performed, or at least, administered to, by the ramifications of a vein, whilst the others are performed by those of arteries. It is hardly going beyond the bounds of the most rigid induction to infer that the former will require a greater force of the circulation and vis vitœ to perform its functions than the latter.

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I have been thus anxious to ascertain the state of the secretions in this disease, as I conceive, that if the fact of their general suppression is fully established, it will throw much light on its pathology.

Mr. Brodie, in the memorable experiment which, I believe he first made, of supporting a sort of life in an animal by artificial respiration, after the head was removed, has added the following important facts to our stock of physiological knowledge.

1st. That the circulation went on for a considerable length of time under these circumstances.

2d. That the generation of animal heat ceased.

3d. That the secretions ceased.

Thereby proving that the circulation of the blood is a separate process from the two last ; but *equally with them dependent upon nervous influence ;* as it was only maintained by the artificial action of the lungs.

Now I conceive that a strong analogy may be traced between the animal under the abovementioned experiment, and a man in the latter stages of Cholera—In one the generation of heat ceases ; in the other it is very imperfectly performed. In both, the secretions arrested. The spasms of the muscles which are produced by decapitation, and which were very remarkable in Mr. Brodie's experiment, correspond to those of Cholera.

The deductions I would draw from these and similar views if they were more firmly established by farther observations and experience, are the following.

1st. The proximate cause of the disease, improperly called Cholera Morbus, consists in a diminution of the nervous energy.

2d. That the privation of nervous influence thus produced in the various organs causes all the functions of life to be either deranged, or put a stop to ; and produces all the phænomena of Cholera.

On this hypothesis the symptoms of Cholera admit of as perfect explanation as those of any other disease which we are most familiar with.

Exp. 1. The giddiness and head ache which usher in the disease are the first effects of the derangement of the sensorium, the principal source of nervous energy.

2. The want of nervous influence, to keep up the action of the heart and arteries, is abundantly sufficient to account for the weakness and irregularity of the circulation (Vide Cullen's First Lines. para. 1174.)

3. And that debility, by rendering those organs incapable of driving the blood in its proper quantities through the lungs, so as to absorb oxygen and give out its carbon, explains the blueness of the bodies and the dark color of the blood.

4. It has been proved that the generation of heat cannot take place

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without nervous influence; therefore the privation of that influence accounts for the remarkable coldness of the body in Cholera.

5. It has also been proved that the secretions cannot take place without nervous influence, therefore the privations of that influence accounts for the remarkable suppression of these functions in Cholera.

6. I am not prepared to say in what way it is, that the privation of nervous influence produces spasms; but that such are its effects we have many proofs, besides the strong one I have already brought forward. Pressure on the great crural nerve in sitting produces spasms in the leg. The common bent positions of a limb, by occasioning pressure on its nerves, often produces a similar effect. The pressure of a tumor on the brain, causes epilepsy. Dr. Cullen has constituted a whole class of causes of epilepsy, which he expressly says, "appear to produce the disease by weakening the energy of the brain," *para.* 1300. *Vide further para.* 1360.

7. He also says that similar causes to these, frequently produce the spasmodic actions of the stomach and intestines in colic. The poison of lead which, like most other poisons, appears to act immediately on the nervous system, produces colic. Concussion or compression of the brain produce vomiting: and thus we may account for similar symptoms in cholera.

8. These effects, it would appear, are produced by a partial interruption to the animating and presiding energy of the brain. A more complete or a total one produces, not spasm, but paralysis. Of this we have an apt illustration in a single case of apoplexy. One side shall be completely paralytic, whilst the other, which retains sense and the power of motion, is affected with spasm. *(Cullen para.* 1099.*)* A partial interruption to the nervous influence proceeding to the heart produces palpitation of that organ: *(Id. para.* 1360*)* A more complete or a total one produces syncope or asphyxia. *par.* 1175. In this way it is that one degree of diminution of nervous influence produces spasmodic action of the stomach and intestines in Cholera, whilst a greater produces paralysis of these organs.

9. The appearances of inflammation, I hesitate at giving an opinion on. Those of others, appear to be divided as to whether they are, or are not, the effects of inflammation. It is not improbable that they are often mere suffusions occasioned by the great determination of blood to the intestines. I do not deny that inflammation does occur in Cholera. On the contrary, in several instances, I have seen febrile heat and reaction come on in the latter stages, and in one, delirium. In the most marked case of this kind there were unequivocal appearances of inflammation in the stomach and bowels, on dissection.

On the whole I am inclined to believe, that inflammation and fever, when they do occur, are incidental and secondary effects; and consequently not essential symptoms of Cholera. We have the authority of Cullen, from the place which he has given it in his nosology, that it is not an inflammatory, but a spasmodic, and consequently a nervous disease.

11. I am aware that this relates only to the European Cholera, which differs from that of hot climates, as is generally allowed, in the presence of bile from the first. Cullen insists that this is an essential symptom of Cholera; but other nosologists differ from him in this instance. *par.* 1464. The diseases agree in so many other points that it is probable they are but varieties of the same species. If there is that remarkable difference, it may be accounted for by supposing that in the milder disease of temperate climates, the privation of nervous influence is not such as to put a stop to the secretions; or that the biliary organs are more liable to be derranged in hot climates, from the specific effects which we have reason to believe heat has upon them. And we know that heat is an active agent in lessening the energy of the nervous system. In both diseases there is the same remarkable debility of the circulation;

the same extreme anxiety; the same spasmodic action of the muscles, stomach and intestines; and in the bad cases, the same rapidity of disease. Is the single circumstance of the presence of bile in the egesta in the early part of the disease, even if unexplained, to outweigh so many others of such magnitude?

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12. In the "Spasmodic Cholera" there is also a great discharge of bile; but it does not occur until the favourable crisis appears, and is the immediate consequence of the preceding remora. In precisely the same way it is, that the exhalant arteries of the skin pour forth their fluids in unusual quantities, after having been for sometime shut up in the hot stage of an intermittent. It is an invariable symptom at the approach of, and during convalescence, and it is very remarkable that in two cases of cholera, which were cured by bleeding, I have seen very acute attacks of hepatitis immediately succeed, apparently produced by this unusual flow of bile.

14. Nor is the absence of bile from the intestines an invariable symptom in fatal cases of Indian cholera. In two cases I found a strong tinge of bile in the intestinal contents; and in one of them a very large quantity in the gall-bladder. In their cases there was also a remarkable coincidence which accounts for the circumstance. When reduced almost to the lowest stage of existence they began to revive. The pulse, which in one had left the wrist, returned, and for a time became gradually more distinct; the natural warmth was restored to the whole body; the blueness nearly disappeared,—evident proofs that the curative process, of which the flow of bile was a symptom, had commenced; but nature was too weak, and had too many enemies to contend with, to be able to go thro' with it. How far the large doses of opium which had been given, in conformity to the usual practice in this epidemic, might be one of these enemies, I will not decide.

For the sake of the classification of our ideas, it is of importance to mark the different stages of the disease: and I conceive there are data sufficient to enable us to do this with some precision.

St. 1. The first stage is ushered in by giddiness, head-ache, anxiety and debility; nausea and griping of the bowels. At this period, I believe, the secretion of bile stops, for invariably, after the common contents of the bowels are discharged, no bile is evacuated after the attack. This stage, I have reason to believe, in some cases lasts several days, and probably in others is altogether wanting. It is certainly very irregular in its duration as well as symptoms.

2. The occurrence of spasms of the muscles I look upon as an important æra, the commencement of the second stage. It is then I conceive, the other principal secretions stop. The fatal sinking of the pulse begins to take place. Blueness, coldness come on; for it is probable that the same degree of diminution of nervous energy, which produces spasms of the muscles, acting upon the heart, causes it to contract with extreme quickness, weakness and irregularity. All the symptoms are now present in their most acute form; and the great struggle takes place. It is quickly decided!

3. After an uncertain lapse of time, but as far as I have seen, from one to four hours, another æra may be perceived, if death is to follow. The vomiting, and purging, and spasms of the muscles cease, whilst the anxiety, debility, blueness and cold increase; or, about this time, the febrile reaction which I have already mentioned takes place. The body is hot whilst the extremities are cold. In all, as far as I have seen, whatever has been given either by mouth or injection is retained unaltered, in this stage of the disease. The paralytic state of the stomach and intestines has taken place. These symptoms generally continue several hours, They may be said to mark the third stage of deprivation of nervous energy.

4. The fourth is death.

It is of little use speculating upon the remote causes of this dreadful

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epidemic, until the enquiry and observations of medical men shall have collected, and their zeal for the common good have made public, a greater number of data concerning it. Thus far however may be conjectured; that it is a peculiar poison, acting immediately on the nervous system; contained in the atmosphere, and communicated by it from place to place; and, like the other morbific misasmata, of too subtile a nature ever to become immediately exposed to our senses. It is, then, by its effects alone that we can become acquainted with it: but by discovering the analogies, if any exist, between these effects and those of other agents of which we have more knowledge, we may reflect much light upon its nature.

The poison of snakes and other animals appears to produce effects on the human frame somewhat similar to the symptoms of Cholera. Sudden prostration of strength, sinking of the pulse and coldness of the body. I am informed also that spasms are not of uncommon occurrence in these cases; and I saw a sepoy some years ago, immediately after the sting of a scorpion, attacked by Cholera in its present form, of which he died. If the pathology of Cholera which I have attempted to establish be admitted, it will draw this analogy still closer; for it is universally allowed that the poison of animals acts on the nervous system. The experiments of Fontana have proved that the blood of animals destroyed by the poison of reptiles is of a very dark colour.

Much and minute attention ought to be paid to the state of the weather during the prevalence of the epidemic. Since its appearance at Bellary it has been alternately clear, and sultry and rainy; and the vicissitudes have been so frequent and sudden as to render it difficult to determine in what state of the atmosphere the greatest number of attacks took place; but it has been remarked at Hoobly that they were most frequent on the fine days. The day on which the unfortunate 34th regiment was attacked by the disease (on its march) and on which they had 39 admissions and lost 10 men, was very clear and hot, and concluded by a dreadful thunder storm and heavy rain. Does a greater quantity than usual of electric fluid exist in the atmosphere during its prevalence? It is observed that in animals killed by lightning, putrefaction instantly commences; and it is attributed to "all the powers of life being suddenly exploded." J. Bell. Anatom: vol. 1 p. 398. The same is found to be the case with human beings killed by fright and other violent passions of the mind. Sannarez Physiology, vol. 1, p. 205.

I have observed in one instance that the evaporation of fluids took place very slowly during the prevalence of the disease. A very small and thin pocket handkerchief was wrapped round a bottle, wetted and placed in the wind for the purpose of cooling wine at one P. M. At 9 it was still so wet that a considerable quantity of water was wrung out of it. Nor had any rain fallen for several days. It may be discovered that the disease is caused by a disordered state of the atmosphere, and not by a peculiar misasma.

I have the strongest conviction that it is not contagious. Its accompanying a regiment on its march is no proof of its being so; for we have every day proofs of the seeds of epidemic or endemic diseases (the Seringapatam fever for instance) lurking in the system for months, and not appearing until the sufferer had left the place where they originated.

A remarkable circumstance attending this disease is the comparative exemption from it which European officers enjoy. It is to be accounted for, I conceive, not so much from their greater temperance, as from their more regular lives than those of the European soldiers; from their warm clothing and greater care to prevent exposure to heat and cold; and from their attention to the first symptoms. These are the preventatives usually resorted to, but the whole list is not equal to, *maintaining an habitual healthy action of the nervous system and its dependencies*, (difficult to be broken through) *by perfect temperance, and the bracing effects of exercise.*

The passion of fear acts immediately on the nervous system, diminishing

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the energy of the brain (Cullen 1180) and may thus, as well as the other depressing passions, prove not an unfrequent exciting cause of Cholera.

I am extremely happy to have it in my power to bear testimony in the strongest terms to the efficacy of the bleeding system of treatment. In four cases I have seen it fail; but in them all the more severe symptoms had continued from five, to thirteen hours before admission. In 32 others I have seen it followed by rapid cures, and in 15 of these the second stage had commenced. In none have I seen it fail, when applied before, or soon after, the commencement of that stage. One of the above cases was in a native; and it was one of the most strongly marked in favour of the practice. The same system has also been pursued to some extent in natives by Mr. Owen, Garrison Surgeon here, and with great success.

Dreadful as this disease is, when neglected, happily it seldom fails, like the rattle-snake, to give us a salutary warning of its approach. It is an object of greater importance to practice, than any other, that these warning symptoms should be generally known and attended to; and in order to impress them more strongly on the memory, I will be guilty of repetition: They are as follows. In almost every case giddiness; in many headache; in almost all a sense of anxiety, lassitude and debility. The skin is moist and colder than usual to the hand of another. The pulse usually accelerated and weakened. There is usually sickness and anxiety at the stomach, and the bowels are griped, with loose* stools. If these symptoms are neglected, those more peculiar to the disease sooner or later are sure to set in; thirst, burning pain at the stomach, vomiting, continued purging, and spasms If the remedies are still not applied, the pulse sinks so as scarcely to be felt; and the patient tosses about in a dreadful state of anxiety. After this, in three out of four cases, the disease has gained such ground as to mock all human efforts; and tho' I have seen bleeding succeed in several cases nearly as far gone as this; in two others it appeared to hasten the catastrophe. In short it is in this case a very doubtful remedy; but as there is little hope from any other I think it ought still to be tried, when age or laxity of habit do not forbid it. The violence of the spasms will be found a useful criterion in this part of

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[*] The following is the account of the first symptoms, in his own words, of Private Greenwood 84th Regiment (a fatal case) as extracted from the medical journal of the regiment. "Has been unwell about two days with dizziness and headache, feeling very faint and queer with now and then a cold shiver and sickish at his stomach and griped, but thought it was from having been drinking;" a still more severe warning was not sufficient to induce him to come to hospital. He had the more severe symptoms six hours before admission.

The whole case of Eliz. Smith, a private's wife of the same Regiment is worthy of recital.

Admitted at 9 P. M. 3d October. Says she was attacked at half past 7 with pain in her bowels, and very soon after vomiting, purging and cramps came on; and that she was very well before; but on making more particular enquiry says, she "has had pain in one side of her head for several days; and that on getting up about the middle of last night she felt very light-headed and giddy and was near falling down, just as if she had been drunk over-night. On getting up in the morning, felt drowsy and heavy, and faint; but this went off on stirring about." Pulse 120, rather small but firm. Has an extreme desire for drink; and a burning at her stomach which she compares to a blister "in her inside," also a pain there, "catching her breathing so that she can hardly draw her breath;" has severe spasms in the abdominal muscles and in those of the thighs and legs, sick at stomach and retching. Skin cool, colour little changed, has taken tinct. opii. gtts. 50 sp. ammon. arom. ʒi in mist. camph. ℥iss. which are not yet rejected. Venæsectio statim.

Half past 9. During the bleeding a very violent fit of spasms came on, and the pulse in an instant almost disappeared from the wrist; the flow of blood however continued in a less degree, and when about lbi. had been drawn, syncope came on and the spasms ceased. On recovering her senses, which she did in a very short time, the pulse returned full and firm to the wrist; and she expressed herself much relieved.

Appy. emp. canth. rejioni epigastrico.

Five A. M. 4th. Soon after the bleeding another fit of spasms came on, but less violent than before, and she had no return of the vomiting and purging. They soon went off and she fell sound asleep, which continued with little interruption the whole night. She now feels pretty well, and has no remains of her former complaints, except a little pain about her stomach, obstructing her breathing, headache and debility. Pulse 80, moderate fullness; heat natural; has had no stool; passed a little urine this morning; the blister has risen well and discharged much serum. Capt. submuriat hyd. grs. xv. and post. hor. tus. ol. ricini ℥.

7th. Dicharged cured.

This is a case which needs no comment.

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practice. They are found to prevail most in robust and full habits, and to mark the rigid fibre which best bears, and is most benefited by blood letting.

Such is the melancholy state of affairs if, as is too frequently the case with careless and fearless soldiers, the first sysmptoms have been neglected or treated as the consequence of a debauch. But if, on the other hand, a bleeding of a pound, or a pound and a half be early made, and a scruple of calomel given, with three or four grains of solid opium or ʒi. of the tincture, and cordials of volatile alkali and camphor mixture, a sleep of unusual soundness quickly ensues; from which the patient awakes complaining only of the slight remains of the disease, and a little fever which usually attends the return to health.

Opium is doubtless a valuable remedy in this disease, but the indiscriminate use of it in very large doses, is highly to be deprecated. There is always a greater, or less degree of apoplectic stupor in the latter stages of the fatal cases, which strongly counter-indicates, the use of this medicine. It is clear that nothing but harm can be expected in persevering in it after the irritation of the stomach and intestines has ceased. The torpor of these organs, and the oppression of the brain which belong to the disease must often be hastened and increased by the remedy.

The views I have taken of the pathology of the disease would lead us to expect great benefits from the employment of stimulants, particularly of the spirituous kind; for their effects are immediately upon the nervous system. They produce a sudden flow of nervous influence into all the classes of organs; and thus excite a temporary vigour; succeeded indeed by a comparative exhaustion leaving many of the marks of want of nervous energy, such as we meet with in Cholera and other diseases. Thus it is that drunkenness is the most frequent exciting cause of Cholera; and here I cannot sufficiently deprecate that most pernicious of all opinions, that a free use of spirituous liquors is a preventative of Cholera.

When however the disease is actually present, stimulants are doubtless highly beneficial, in moderate quantities. It is a great object to discover which classes of them, whilst they excite the vital energies, shall least exhaust them. Ammonia, camphor, the essential oils, and the whole tribe of spices, appear preferable in this respect to spirituous liquors. Opium seems to be a stimulant possessing this property of exhaustion in the highest degree.

The same theoretical views, if confirmed, would lead us to try the respiration of oxygen gas, or even of nitrous oxyde; which last appears to have a wonderful effect in encreasing the energy of the nervous system, as is evinced by the irresistible impulse to muscular motion which it excites, without, as it is said, causing subsequent exhaustion or oppression. The former might be tried without risk.

The recumbent posture should be invariably persevered in Cholera, unless we wish to bring on syncope from bleeding; for a very little experience teaches us that the opposite one greatly increases the debility. On this account, the warm bath should always be administered in this position; when it will frequently be found to raise the pulse and restore the desired warmth and perspiration to the body. Frictions with stimulating liniments are rather exceptionable. They are incompatible with covering up with blankets; and if composed of any evaporable fluid they greatly increase the cold.

I cannot discover what benefits are expected to arise from withholding drink altogether, or nearly so, in this disease; nor the evils which are apprehended from a contrary practice: and we ought to be well assured of its propriety before we negative the calls of nature when they are so extremely urgent. The mistaken notions of our ancestors induced them to commit this cruelty in dropsy. I will not deny that reasons sufficiently strongly may exist: I have only to observe that I have seen no bad effects arise from a moderate indulgence in fluids not quite cold.

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Concerning the rationale of the treatment by bleeding and calomel, I have as yet nothing worthy to offer. I conceive the practice is yet completely empirical, and that it remains for farther investigation to remove this opprobrium.

The practitioner must not expect to find the train of symptoms which I have faintly sketched, or any other, a true picture of the disease in every case. In no disease does a greater variety of symptoms occur. In many cases some of the most essential are altogether wanting. In some of the worst and fatal cases, there are no spasms of the muscles. In many, little or no purging or vomiting. Debility is the most contant symptom, but it is not universal. It generally accompanies the muscular spasms; I have frequently seen the pulse sink at once on their accession; but in the most violent case of spasms, I ever saw, in this or any other disease, there was no debility. The whole body was perfectly rigid and immoveable, and the retching never ceased for an instant. Happily the patient was brought to hospital immediatiely. His pulse was full and hard. He was bled to 40 oz. from the arm and jugular vein, and the bad symptoms gradually disappeared.

The inconstancy of the symptoms is not however such as to cause a difficulty in the diagnosis: so numerous and striking are the essential ones of cholera, that this can never take place: but it may, and does, render our practice wavering; and until we acquire true notions of the nature of the disease, and deduce from them the true indications of cure; such as to lead us to contend with the disease itself, and not with its variable symptons—until these great objects are gained, our practice must ever remain inconstant and empirical.

I feel great diffidence in bringing forward the foregoing speculations unsupported by rank or name, and on the authority of not more than three weeks actual extensive experience in the disease, but I am anxious to bring them to the test of the experience of others; and I trust they will be deemed of sufficient importance to be either confirmed, modified, or refuted.

I have only to add, that this essay was written previous to my perusing the Circular letter, with cases, from the Medical Board to Superintending Surgeons, dated 3d August 1818, which reached me only a few days ago. This, I trust will acquit me of any want of deference to some opinions of minor importance contained in that paper. I am much gratified in finding that those strong and faithful pictures of practice coincide in so many instances with my own views and experience, as detailed above; and particularly from the fact of the suppression of urine, as well as of bile, having been so clearly observed by others, as well as myself, that no doubt of the circumstance can remain.

Asst Surg. R. Orton, Wallajahbad, 22d June 1822.

I do myself the honour to forward to the Medical Board a few observations on the Epidemical attack of Cholera which has lately been experienced by H. M. 34th Regiment.

The cases which appeared on that occasion did not in general exhibit any marked difference from those which were observed during the first severe prevalence of the disease, in 1818, and 1819. I was, however, struck with the absence, in very many cases, of some of the most remarkable symptoms. The burning and pain at the stomach were very seldom observed. Spasms were often entirely absent. Vomiting was little remarkable, and soon ceased, particularly in the most severe cases. Watery purging I have always found the most constant symptom, and generally the first that is taken notice of. It usually comes on very suddenly, and the stools recur at very short intervals, and are accompanied with great sense of debility, with paleness and shrinking of the features. These symptoms are, alone, I conceive, sufficient to point out the presence of the disease, and the necessity for the immediate employment of its remedies. On the last day of the disease prevailing with any severity in the corps, two cases occurred, which are fresh instances of the great variety of forms which the disease puts on.

Asst. Surg. R. Orton, Wallajahbad, 22d June 1822.

In one of them, there were most violent and painful spasms, but no other symptom of cholera excepting thirst, and once retching. It was speedily cured by bleeding, opium and brandy, and as usual ended in sound sleep. In the other, there was no perceptible appearance except the spasms. The patient looked and felt well except being tormented with cramps in his limbs, which lasted about 24 hours.

It has been commonly observed, that our chance of success in the treatment of the disease depends much upon the progress which it has made when we are first called in, but probably few, at least of the actual sufferers, are sufficiently impressed with the vital importance of attention to this point. The severe kind of the disease seems, in general, to have a tendency to run on progressively to death, unless interrupted by art; but if taken in time, it is probably more under the control of medicine than any other dangerous disorder. Almost all the fatal cases in the late attack in the 34th Regiment were very considerably advanced before they came to hospital; and the deaths of a number of them may be fairly ascribed to that circumstance. Soldiers are usually so careless and stupid, that it is very difficult to get them to hospital when first attacked; and on that occasion, it was particularly so, on account of the confusion and drinking in the corps owing to its volunteering.

The treatment we adopted was in general the same as had been previously employed—opium, spirituous and aromatic stimulants, blisters, occasionally bleeding, and, after the favorable crisis, calomel and purgatives. The aromatic which was generally employed was *cloves;* and it appeared to me extremely well adapted for the purpose. It is highly agreeable to the taste, and an active stimulant. It was usually given in the form of a tincture, composed of ℥ii of bruised cloves to a bottle of brandy. A draught composed of ℥ss. of this tincture, with ʒi. of tinct. opii., and a little water, was usually given at first, and repeated as often as rejected, care being taken to ascertain that it was actually thrown up. If relief was not obtained in two or three hours, it was repeated, though not rejected. The following mixture was also in general use.

℞. sp. vin. gallic ℥xvi.
Aquæ puræ ℥xxxii.
Tinct. Caryoph. ℥xii.
Acid nitric. ʒiii. m. ℥ii. omni hora sumend.

Nitric acid is recommended in a paper which was circulated by the Medical Board, and evidence is there adduced of its good effects in the disease. In some instances it had also appeared to me, decidedly beneficial. It is certainly extremely agreeable to the palate in the above mixture, and tends to allay the excessive thirst, and probably to quiet the stomach.

Our experience with regard to bleeding has been rather unfavorable to it in the more common, and severe form of the disease, that is, where there is great debility of the circulation, coldness, and paleness of the surface. In several cases where it was tried, it was followed by irretrievable sinking. But in a numerous class of cases where there was considerable appearance of increased action, as flushing of the face, temperature rather above, or not below natural, and often severe spasms, though the pulse in some of them was small and contracted, bleeding was attended with the best effects.

For a long time before the disease appeared in the 34th Regiment, the weather was extremely clear. The first cases happened on the evening of the 14th May; and on the following morning a remarkable change in the weather was observed to have taken place, for, during that and the two or three following days the sun was scarcely ever seen. About the same time the land-wind set in with great force, and continued for several days throughout the 24 hours. As it appeared from former accounts that these winds had a beneficial effect on the epidemic, I was in hopes that they would have stopt its progress, but it continued to increase

Asst. Surg. R. Orton, Wallajahbad, 22d June 1822.

apparently uninfluenced by them. We had only two or three slight showers of rain whilst the disease prevailed, but there was much appearance of rain to the westward; and I was informed that a heavy storm, with rain, happened at Arcot on the 15th. The storm in which the *William Mills* was lost in the Bay began on the 17th, and the newspapers contain many accounts of stormy weather in the Bay during the month. I was informed also that a violent squall with rain happened in the camp of the 53d Regiment, when they were attacked with the Cholera, about the time of their entering the Carnatic, and swept down their tents. The excessive heat at the Presidency during the latter half of the month, and the great number of sudden illnesses and deaths at the same time, were matters of general observation. All these circumstances, and the severe prevalence of the epidemic about the same time in 34th, 53d and 54th Regiments, sufficiently shew the existence of some general cause of disease, particularly as we hear that the disease sprung up again in Bengal about the same period; but its effects necessarily must be greatly modified, increased, or prevented, by particular circumstances. The 54th must have contained many subjects highly susceptible of the disease, from being just arrived from a temperate climate, and having never before experienced it. They have therefore suffered the most, though, from being in quarters, they were more favorably situated than the others. The 53d was exposed to one of the principal exciting causes of the disease, residence in camp, and besides must have suffered a very great increase of temperature in passing from Mysore into the Carnatic, at the hottest time of the year. The 34th, in addition to the former of these causes, suffered much from excessive intemperance arising from the volunteering; but the epidemic had distinctly broken out before the drinking began.

One of the most striking, and best established facts, regarding the causes of the disease is, that troops are more subject to it in camp than in quarters; so much so, that I believe bodies of men have rarely moved in the country of late years, without suffering from it. It is well worth enquiry, and probably might be fully ascertained, whether standing and marching camps are equally obnoxious to it? In the late instance in the 34th Regiment, it is evident that marching had no share in producing it, for they had moved only seven miles, and that, a week before it appeared. It is very probable that the great increase of temperature suddenly experienced on moving from quarters into camp, and the relaxation and debility thereby produced are the circumstances which render the latter situation so much more subject to Cholera than the former. On the abovementioned occasion, I found the heat of the tents extremely oppressive and enervating. During an inspection of the volunteers at that time, I observed the scrota of the men excessively relaxed and pendulous; whilst on a similar occasion, a few days afterwards at Wallajahbad, they were as generally found in their natural state of half contraction. It is probable that the heat of camp produced a correspondent want of tone throughout the whole system, as well as in that particular part.

No case of cholera appeared in the 34th Regiment for several months before the 14th May. From that day to the 25th, the day on which the corps marched for Wallajahbad, it prevailed severely, irregularly increasing and diminishing. On the 25th the cases were rather numerous but all manageable, and after that, for about a week no case appeared. On the 1st and 2d June several more cases occurred; after which they again disappeared until the 19th. On that, and the next day, three cases happened, one of which was in a patient in hospital who was much reduced from an attack of continued fever, but convalescent. He neglected for six hours to apply for assistance, and rapidly sank and died. The total number of cases is 87, of whom 20 have died at Head Quarters, and one in General Hospital at Madras.

Surgeon T. Owen, Bellary, 13th October 1818.

I have the honor to transmit to you my journal, containing the few cases of Cholera, which have occurred among the Europeans under my charge;

SURGEON T. OWEN, BELLARY, 13TH OCTOBER 1818.

and am sorry that my avocations will not admit of my entering on the pathology, or minutely into the treatment of this formidable disease, as it appeared to me. The two first cases were slight, and yielded easily to laudanum and calomel. But we had soon to observe, that with Europeans, these medicines failed, though the disease was taken at the commencement, and the utmost attention, paid to the treatment of it.—The appearances on dissection, have been so uniform in their tendency to prove the great necessity, of relieving the circulating system, and preventing that congestion, which has been in every case so apparent—that blood letting became with me a primary object of attention. I have therefore used the lancet with some degree of freedom. And where the disease would admit of a sufficient quantity of blood being abstracted, I have found it of the most essential service, in relieving spasm, and the irritability of the stomach.—But how far it can be used with safety, in weak and debilitated constitutions, and old age, still remains doubtful, yet in these even, if taken with *caution*, and in *sufficient quantity, in the first instance*, it will be found a valuable auxiliary.

I have taken ℥xx of blood from the arm of a delicate native woman, with the happiest effect, where the spasms were very violent, nothing more being required afterwards, than a dose of calomel and rhubarb to open her bowels.

You will observe in the case of Matross Tute, that ʒxxxx of blood was taken, before the spasms abated, and though they afterwards returned with considerable violence, yet his pulse immediately rose, and became soft and full, and the heat returned to the surface. This I am confident would not have taken place, had not the circulating system been relieved in the first instance—Nor do I think the same effect would have been produced, if this quantity of blood had been taken at two or three times.

I am happy to say that I have not lost one patient, who has been bled, or at least, when the blood would flow in a moderate degree, so as to relieve the most urgent symptoms.

ASST. SURGEON JOHN MACLAINE, 84TH REGT. BELLARY, 9TH NOVEMBER 1818.

IN forwarding my monthly returns I beg leave to offer a few remarks in blood letting in Cholera.

In recent cases, where the patient has reported himself early with the usual symptoms, of giddiness, and a burning sensation at the scrobiculus cordis, with retching, vomiting, and purging, the latter is generally slight, and most particularly with *spasms*, blood letting is attended with the most beneficial and immediate effects in alleviating those urgent symptoms, administering a cordial draught with tinct. opii, applying a blister to the epigast. region, after which the patient falls into a sound sleep which continues for several hours ; then calomel may be given with the best effects, and in a few hours afterwards, an aperient draught, assisted by quickly stimulating injections ; but where there is coldness and clammy sweats, with want of circulation in the extremities, and lividness of surface, I fear blood letting is a doubtful remedy ; indeed in this stage, blood will not flow by any means ; yet it is the remedy that the appearances on dissection point out as likely to be useful, could it be extracted in sufficient quantity. I may here express my doubts respecting cordials, the warm bath, &c ; although freely used in this stage of the disease, yet they did not answer our expectations.

The symptoms are extremely various, the primary are vertigo, a sense of langour succeeded by cold perspiration, uneasiness at stomach, griping with slight watery purging mixed with white mucus ; vomiting or retching without any purging, frequently without spasms ; when a patient reports himself early with these symptoms, he may be soon relieved ; from my limited observations on the disease, as it appeared in this place, blood letting, is only applicable in the most of instances, in cases of spasm, (but not of any standing), that is, when there is no coldness or lividness already taken place.

Asst. Surgeon John MacLaine, 84th Regt. Bellary, 9th November 1818.

I am satisfied that calomel and opium should not entirely be trusted to, with Europeans—the former I have observed to be attended with the best effects, when given some hours after the patient has become composed, by the means already mentioned; when blood-letting is had recourse to, it should be largely, considering at the same time, the patient's constitution and habits. I found it necessary to go to the extent of ℥ xxviii at once, vide Lukeland's case—and even after this, the pulse continued full, but became softer, with an immediate abatement of the spasms, which never recurred; the pulse frequently leaves the wrist at every attack of spasm, and it is evident, if that most dreadful symptom of the disease, is not early arrested, it must very soon extinguish the vital powers by forming congestions in the internal organs, and most particularly the lungs—anodyne injections, from what I could observe, should be sparingly used; they may allay the purging, and answer when medicine will not be retained in the stomach, but I am convinced they add to the torpor, already existing, and increase the tendency to inflammation in the intestines, which is very conspicuous on dissection; the purging is generally slight, and I view it as a symptom of little consideration; I now chiefly use emollient injections, with occasionally some common salt; I have had several cases of cholera amongst the natives attached to the regiment, with whom the calomel and opium invariably succeeded.

Asst. Surg. G. Bucke, Dekkan, 2d August 1818.

The importance of a disease so dangerous as the "Cholera Morbus," will, I trust, plead my excuse to the Medical Board for drawing their attention to the few observations I have had an opportunity of making on it, and although amongst them little new will be found, yet it will be satisfactory to find that the disease, if taken early, generally yields to the power of medicine.

It began in the Camp of the Mysore Silledar Horse, when encamped on the north bank of the Godavery on the 18th July 1818. It commenced with frequent vomiting and purging, sudden and great prostration of strength—the matter thrown from the stomach was thin and watery, sometimes of a light yellow colour; at others, it resembled curdled milk and water—the stools consisted of the same kind of watery evacuations; the natural fæces were in all retained, and in a solitary case, or two, a small quantity of blood was passed—there was not that superabundance of bile so generally met with in the true Cholera, on the contrary, I thought less bile was secreted than usual:—The pulse was always weak and depressed, frequently barely perceptible, and if the attack was severe and had existed six or seven hours before the patient was brought to the hospital (and which was frequently the case) it was lost altogether, and the extremities becoming quickly cold, the powers of life, at once gave way. Indeed the sudden and great prostration of strength exceeded any thing I could have imagined. It was not an unusual thing for a Silledar to arrive at the ground of encampment in perfect health, be attacked with the disease, and in an hour be so weak as to be totally incapable of the least exertion, even that of sitting upright.—Spasm in the muscles of the abdomen, legs, thighs and arms was almost a constant symptom, and the agony dreadfully severe, and the intervals of pain so very short, that their sufferings from this were nearly constant till relieved by medicines or the warmth of fomentations. If in any case, spasm did not exist, there was a burning sensation at the scrob. cordis which distressed the patient much. The eyes were generally dull and heavy, covered with a thick glutinous film, and a few hours before death, they became insensible to the rays of light. In a very few the tunic. conjunct. was yellow, and in some others, suffused with blood, which did not appear an unfavorable symptom. The tongue was covered with a thick brown slimy matter, and in no case did I observe it clean. Headache was an occasional but not a constant symptom. Thirst was excessive, with a strong desire for cold liquids which proved highly injurious. The skin in one case only, was above its natural temperature, in every other below it, and frequently clammy, from a cold perspiration which followed the fits of spasm. The urine in some was limpid, but more generally of a dark brandy colour, producing a sensation of heat in its passage through the urethra.

Asst. Surg. G. Bucke, Dekkan, 2d August 1818.

In the first few cases, I began with large doses of calomel and laudanum, with a small quantity of congee, to abate the incessant thirst, strictly forbidding the use of cold water; but finding the vomiting not subdued by this method, and apparently increased by the warm fluid, whilst cold liquids produced spasm and griping pains—I changed my plan, as I found the disease quickly advancing to its fatal termination, and directed opium (made into a very soft paste to ensure its speedy operation on the coats of the stomach) to be given with the calomel; and instead of warm congee, an infusion of cinnamon and cloves, nearly cold, which proved an agreeable stomachic; but the thirst continuing so excessive, and the calls for drink so incessant, I allowed a spoonful of congee barely warm, and occasionally a little of the infusion to be given at a time, as I found, if more was taken, it rarely failed to produce vomiting. At the same time, fomentations as hot as could be borne, were strenuously applied to the seat of the spasm—finding under this plan I generally at once subdued the vomiting, my next object was to change the watery evacuations for healthy stools, and for this purpose I employed various purgatives: but finding salts, jalap and the compound powder of jalap seldom remain on the stomach, I had recourse to the ext. colocynth. or the croton pill, both of which answered the purpose, and evacuated the bowels of their highly offensive dark colored contents. After a few copious stools had been procured, the amendment was striking; the pulse rose, the natural heat gradually returned, and the patient was roused from his former listless state to a sense of returning health and strength; when the first dose of the medicine was rejected (as was not frequently the case), I waited a little, consulted the inclination of the patient as to what he would like to take, of which I generally gave him a little—as the stomach retained this, I repeated the opium; and the vomiting ceasing, the calomel was administered—as I found the stomach so extremely irritable, and the only organ through which I could administer to the disease I thought it advisable to humour its inclinations, and allow the patient to take in minute quantities, the article he seemed to like, convinced that if the stomach could not retain what it fancied, it would not, nauseous medicine forced upon it: I was careful however, not to lose too much time in my attempts of this kind, in a disease which experience had taught me would be quickly fatal—by degrees as the state of the stomach allowed, I encreased the quantity of congee to assist the purgatives which were frequently slow in their operation, carefully avoiding any distension of stomach. Although I considered checking the vomiting as the first and most essential object, I yet found my patient not materially improved till the purgative had taken its full effect. In the fatal cases the bowels were obstinately costive, except the watery evacuations mentioned as a symptom of the disease, and I lost no one whose bowels were freely evacuated—in some the desire for cold water was so irresistible, that a few took it by stealth in very large quantities; this never failed to add to their sufferings, the vomiting was reproduced, and the force with which it was thrown off exceeded any power I imagined the stomach possessed.

Where the extremities were cold or becoming so, friction was employed, hot bricks applied to the soles of the feet, and heated sand placed under the extremities with much benefit; and occasionally a small quantity of brandy was given, where the circulation was languid. It had no good effects on the nausea and vomiting.

I should observe that in dropping the calomel on the tongue as recommended by Mr. Corbyn, I found a considerable portion of it adhering to the slimy matter on the tongue and fauces, altho' the mouth was washed and the fluid afterwards swallowed, which did not find its way into the stomach; and frequently in letting it fall on the tongue, a full expiration was made, and part of it was forced out of the mouth.

From the 8th to the 26th inclusive, 209 were admitted into the hospital, of whom 22 died, and the remaining 187 recovered.

Staff Surgeon A. Connell, Secunderabad, 26th September 1818.

I am sorry to say, that the Cholera which a short time since had nearly disappeared at this station, has again shewn itself among us—and I regret to have to state the deaths from this disease, of Lieutenants H ———, and S ———, both of the 14th Regiment Native Infantry, who were here on leave from their corps, and living together in the same compound.

Lieutenant H ———, had been considerably reduced by a pulmonary complaint, under which he had laboured for about two months, and on the whole was of a very delicate constitution. He was attacked at 8 o'clock of the evening of the 12th instant, and expired at 6 next morning. So quickly were the powers of life exhausted, that in an hour from the attack, the extremities were cold, and the pulse not to be felt at the wrist. He had no pain in his bowels, but a sense of fulness in the belly, and a sensation of excessive sinking at the stomach.

He vomited twice or thrice only, and had seven or eight copious watery motions during the attack; his body from the first being covered with a cold perspiration, while his countenance suddenly assumed the worst appearance observed in this disease.

Two hours before his death, cramps of the lower extremities supervened, stretching up his thighs, and he complained of severe pain in his back, extending round the body, and impeding respiration. This last I ascribed to spasms affecting the diaphraghm, and from this cause, the difficulty of breathing in general observed in this disease may perhaps be accounted for.

All the usual remedies were had recourse to by Mr. Stephenson and myself, who was so kind as to attend along with me, without producing the smallest benefit, and from the patient being free of pain in his stomach and bowels and his excessive exhaustion, we were induced to carry the stimulant plan to a very considerable extent, giving him laudanum and calomel in brandy, and making him take quantities of hot Madeira, with occasionally hot brandy and water.

In order to produce some appearance of bile in his stools, doses of tinct. of sennæ were repeatedly exhibited, and stimulant injections used, but without the desired effect, nor did the warm bath in this case seem attended with any benefit, on the contrary, occasioning a disposition to syncope.

He was to the last perfectly sensible, and indeed I have seldom observed the mental powers affected in this disease.

For the case of Lieutenant S—— I refer you to Mr. Assistant Surgeon Selby's detailed account of the attack accompanying this; and appearances on dissection—The powers of life did not sink so suddenly in this instance as in the former, and for this reason—perhaps, the spasms attending it were more severe.—He was also much debilitated by previous illness.

Two instances of Spasmodic Cholera have occurred here, in which, instead of the usual symptoms of vomiting and purging, obstinate constipation took place.

The first was in a sepoy of the 21st Regiment, who complained of pain in his bowels with costiveness—a dose of castor oil was prescribed, and this having no effect, a second of two ounces was given, which seemed to aggravate his distress, inducing swelling of the abdomen with excessive pain; cramps of both upper and lower extremities now made their appearance, with a sinking of the pulse and cold perspiration—I was then convinced the disease was Cholera, when strong purgative glysters, and the warm bath at last relieved him, and by giving repeated doses of the croton pill, free purging came on, when the man immediately got well.

The other anomalous case, is that of a Subidar of the same Corps, who was recovering of a long protracted intermittent. He was suddenly attacked with

STAFF SURGEON A. CONNELL, SECUNDERABAD. 26TH SEPTEMBER 1818.

severe pain in his bowels, difficult respiration, great sinking of strength, and spasms of the muscles of the thighs and legs. Had had no vomiting, and the belly costive for two days.

When I was called to see him, an hour after the attack, the countenance was sunk, the extremities cold, and the pulse not to be felt. Fifteen grains of calomel with 80 drops of laudanum were immediately given him, along with a drachm of æther, followed by the croton pill, purgative injections, fomentations, and the warm bath. The injections were returned without effect; and the croton pill proving also ineffectual, six grains of calomel, with three of aloes were given every two hours, to the third time. The laudanum was exhibited in the hopes of allaying the spasms, and allowing the purgatives to act. Not the smallest effect was produced, and under the exhausted state of the patient, it seemed impossible to think of bleeding, even could blood have been procured.

Great difficulty of breathing, excessive restlessness, and intense thirst speedily supervened, and the man died 8 hours from the attack. I could not obtain permission to examine the body.

That this was a case of Spasmodic Cholera, there can be no doubt, and which proves that vomiting and purging are not to be considered as constantly accompanying the disease. Mere inflammation of the bowels would not have sunk the strength and pulse so suddenly as happened in this case, or have induced spasms of the extremities.

Of the six cases of Cholera which occurred in H. M. Royal Regiment here, (three of which are detailed in Mr Davidson's Journal), the lancet was had recourse to in all of them, except in the fatal case of Yates; and I may observe, that this last case resembles very exactly the disease, as it appeared in general in the natives, or in those of a weak habit, or who have been reduced by previous illness. In the others, the pulse being full and strong, with difficult respiration and severe spasms, the propriety of bleeding is very evident, and it seems to have been attended with the best effects.

In these also, some shew of bile was observed, both in the stools and in what was ejected by vomiting—which marks a difference from the ordinary appearances in the disease. The case of Hammond detailed by Mr. O'Reilly seems to have had some affinity to dysentery, and Mr. Davidson observes that he has classed it with that disease.

In Mr. Stephenson's journal you will also find a case detailed, where bleeding seems to have been attended with the best effects; but as yet, we have not sufficient experience to decide on the propriety of having recourse to this remedy in all cases, or in those only in which the pulse is full and strong.

I have already informed you, that on the first appearance of cholera here, a General Hospital was established for the reception of men belonging to the Troops labouring under the disease, and Mr. Assistant Surgeons Selby and M'Dougall were appointed to have charge, and be alternately in attendance.

I beg to refer you to Mr. Selby's observations on Cholera accompanying his journal, for a statement of the numbers admitted, discharged, and dead. And on the whole we consider ourselves rather fortunate in the disease, having appeared with less severity here than at most other stations; and in the comparative small loss we have experienced.

Under our present state of ignorance, I shall not venture any particular observations in regard of the cause exciting this disease; though the opinion, that it depends entirely on a morbific state of the atmosphere is encumbered with many difficulties. As for example, its slow progress over the country, unlike other epidemics; its having lately traversed the country directly in opposition to the current of the atmosphere, its course having been from N. E. to S. W., and its progress seemingly following the most frequented routes.

Staff Surgeon A. Connell, Secunderabad, 26th September 1818.

I am unable indeed to say, that it has never appeared at any place till after the arrival of individuals from places where the disease prevailed, though its attacks are certainly confined at first, to particular spots, after its appearance at any large capital or station. As an instance, I may observe, that it prevailed at the Residency, and in the Begum bazar near the city of Hyderabad, 5 miles from our lines, many days before it reached the cantonment. And it was a number of days before it extended from the Begum bazar into the city, though separated from each other only by the river Moosa—Those first affected of our people were sepoys who had returned from duty at the Residency—whilst the corps on the left of the line was first attacked, and the others in succession, after several days.

These facts are difficult to be reconciled to the supposition of the disease depending solely on atmospheric influence, which we would suppose, would be more rapid in its progress, and act in a more general manner—at the same time I am unable to give a single instance, where I could positively say the disease arose from contagion.

Whatever therefore may be the nature of the exciting cause, it seems most apt to affect those of delicate constitutions, or who have been debilitated from previous illness. And its effects are such, as if a highly sedative poison was taken into the system, as neither the vomiting or purging, or the spasms excited, will account for the sudden failure of the powers of life as happens in this disease.

If your theory is correct, that the exciting cause produces spasm in the extreme arteries, which is propagated along their course towards the heart—bleeding would seem the most likely remedy—as by diminishing the quantity of blood, the spasm on the arteries would probably be removed and the circulation restored.

Staff Surgeon A. Connell, Secunderabad, 20th May 1819.

I BEG to report to you for the information of the Medical Board, that the Spasmodic Cholera has been lately prevailing here to a considerable extent, and though few casualties have occurred among the troops, yet a considerable number of the native inhabitants have died of it.

On the instant a detachment of Europeans from Madras, under the command of Major Wahab arrived here, having the cholera amongst them; and which first attacked the detachment at the Kistnah, after exposure to a heavy storm of wind and rain, and continued with them from thence to this place, although all the villages in their route were entirely free of the disorder. From the Kistnah, to this place, the party lost about 60 individuals, of whom 8 were Europeans.

The detachment on its arrival here, encamped about 200 yards in front of our Artillery lines, where 3 Europeans, and a number of natives died of the disease.

At this time, the disorder did not prevail in the cantonment, but the Europeans of Major Wahab's detachment mingling with our party of Artillery, the disease, in the course of three or four days appeared among the latter, and 5 or 6 men were severely attacked with it. By prompt assistance however, they all recovered.

The wife of a Conductor in the Artillery lines was the next attacked, and her friend, a Mrs. Gray, attending on her for a couple of hours, was seized with the complaint, and died next morning; she also resided in the Artillery lines. Her son, a boy about six years old, and living in the same house, was attacked with the complaint the day after the death of his mother, but recovered.

My Sub-Assistant, Mr. Hoskins, who was constantly with the sick, got the disease, and died in 24 hours. Another acting Sub Assistant, Mr. Sleven, who in particular attended Mrs. Houghton had it severely, and Mr. M'Dougall, Assistant Surgeon, who was much among the sick, had also a smart attack. From the

Staff Surgeon A. Connell, Secunderabad, 20th May 1818.

Artillery lines, the disease got into the bazars, and a number of natives died. Of the native troops, not above six men died, out of three battalions. The men of H. M. 30th Regiment, who are in barracks about half a mile to the right of the line, escaped the disease entirely, not a man having been affected, or any of their followers.

I beg to add, that Mr. Jones, Surgeon of the 6th Light Cavalry, having just arrived from the Kistnah by the same route as Major Wahab's Detachment, found the disease prevailing in every village, having commenced after the passage of Major Wahab's detachment, and the inhabitants reporting that they got it from that detachment.

How far any of these facts seem to indicate, that under certain circumstances this disease is of a contagious nature, I shall not pretend to say, but during our present uncertainty on this point, it might be advisable not to admit detachments of troops having the disease amongst them, to encamp in the immediate neighbourhood of Cantonments or Stations.

The most effectual treatment with the Europeans, was immediate, and copious blood-letting, giving besides, the other remedies, calomel and laudanum.

Two of the Europeans who died here, belonging to Major Wahab's detachment, were opened, and in one, the stomach was much inflamed ; in the other, the small intestines.

These men however, there is reason to believe, had been drinking hard previous to the attack ; in my Sub-Assistant whose body was also examined, no morbid appearances were observable, except that the villous coat of the stomach, separated from the others with the slightest touch ; this appearance had likewise been observed in the Europeans.

The disease still continues to lurk among us, one, two, or three cases, occurring daily in the bazars.

Staff Surgeon A. Connell, Secunderabad, 26th September 1819.

I am happy to report that the Spasmodic Cholera has prevailed comparatively but little during the month of August, though a few casualties from the disease have occurred at this station.

In these cases, the spirit vapour bath was fully used, but without any benefit, and bleeding was in general impracticable, in consequence of the patients being too far exhausted, before being brought to the hospitals.

I beg to observe, that I have hitherto remarked, that the disease is most prevalent at the periods of the change and full of the moon, and even the natives themselves have made the same observation.

I think I have observed of late also, that those cases where there is much vomiting, commonly terminate favorably, the frequent vomiting. shewing that the stomach has not entirely lost its vital powers—On the contrary, those cases where there is much purging, with little or no vomiting, are very apt to prove fatal ; and again, the most speedily fatal cases seem to be those where there is little of either vomiting or purging, shewing as it were, that the whole alimentary canal is in some degree paralysed.

Asst. Surg. W. Train, Ghooty, February 1820.

In my last I had the honor to inform you, that the Spasmodic Cholera continued to infest us at this station, and I am sorry now to acquaint you, that it still continues ; I should, long ere this, have furnished you with an account in detail of the disease, as it appears now amongst us, with such a list of the numbers attacked as I might have been able to obtain, but I have since I last wrote you, been myself seized with Cholera, from which, although I have recovered, yet my strength has not been capable of exertion, beyond that which has been indispensibly necessary at the hospital.

Asst. Surg. W. Train, Ghooty, February 1820.

I mentioned to you in a former letter, that the Spasmodic Cholera first appeared amongst the inhabitants of this place, immediately after the departure of the 1st Battalion 16th Regiment, amongst whom it had been raging during their march from Hydrabad, and continued during a halt of three days at this station—the disease as it appeared amongst them, was in its very worst, and most fatal form; that of a general and rapid sinking of all the powers of life, without much previous cause either in vomiting, purging, or spasm, to account for so sudden and fatal an effect.

This form of the disease has been continued to us, amongst whom, without here venturing to give an opinion of the manner, it has evidently been left, by that body of men who were suffering from it, whilst they remained at this place.

There has been nothing, as far as I understand, uncommon in the state of the weather immediately preceding, nor since the appearance of Cholera at this station; the moon, it may be observed, was in its last quarter.

Amongst the sepoys who have come under my charge, the mortality has been very great, owing in a great degree to delay in reporting themselves sick, and also to the peculiar form of disease with which they have been seized; which has in the space of an hour or two reduced them to a state of exhaustion from which the constitution could not be roused; or, if after the exhibition of medicine, a feeble attempt at reaction were apparent, the patients have in general sunk quickly into a state of greater weakness than before, evidently shewing, that the powers of life, had been so quickly and greatly reduced by the disease, as to have rendered the constitution incapable of exerting that reaction necessary to the restoration of health, or of supporting it if excited by medicine.

The usual symptoms of the disease have been, a vomiting, or purging, or both, of watery matter, with great and sudden depression of strength; the pulse rapidly sinking, the extremities becoming cold, with cold sweats. The eye, in advanced stages, sunken in its orbit and covered with a misty film; spasm has occurred in a few cases, but seldom severely; of course these symptoms, greater or less in degree according to the duration of the complaint.

The practice I have followed has been, bleeding in every case when blood could be procured; and here I may observe, that when this is the case most patients recover; in general, on opening a vein, the blood flows only in drops, nor can even the most violent stimulants affect the circulation sufficiently to produce a flow from the veins of the arm. I have in 2 or 3 instances opened the temporal artery, but without benefit, the quantity of blood obtained by this means being still so small, as apparently in no respect, to influence the internal congestion by promoting the circulation generally.

The prejudices, which, to obtain the confidence of the natives, must at all times be as much as possible respected, are so much against bleeding, that I am of opinion, many more men would come quickly to the hospital, were it not on account of that, and other remedies employed in this disease, the application of which they dread, and determine to avoid as long as possible; argument has no influence in convincing minds prejudiced as theirs, nor have I observed that soothing language, nor the greatest attention, are noticed in any way by a man laboring under spasmodic cholera, so as to prove an encouragement to others.

If the consequence of these prejudices were only confined to the individuals who profess them, themselves would be the only sufferers; but unfortunately every case of protracted cholera, which comes to hospital for aid and dies there, operates, I fear, as a further preventative, and keeps many at home till too late, whose prejudices are not so great. These men have told me as a reason for not reporting

Asst. Surg. W. Train, Ghooty, February 1820.

till all remedies were of no avail, that when seized with cholera they were convinced they must die, and preferred therefore remaining amongst their friends and relations, till a roll call, or some matter of duty has produced enquiry, and their consequent admittance into hospital.

A draught of laudanum, with camphor or ammonia, and peppermint in hot arrack, has been given immediately on admisson ; frictions, general, and partial have been employed, with heat to the extremities, and mustard poultices to the feet and hands ; whenever irritability of stomach has prevailed, a blister has been applied over the scrobiculus cordis, and in several instances when vomiting has been excessive, I have used the nitric acid over the stomach, to produce erasion prior to the application of a blister : the draughts have been repeated according to circumstances.

I tried the warm bath on one man : he was much exhausted ; the circulation languid, extremities cold, with the cold sweat ; I should think he would have lingered some hours in that state ; upon putting him into the tub of hot water, he immediately gave a shriek and died : this has before happened to me at Chittledroog, and I am quite convinced, that the applying so general a stimulus, as a hot bath, to patients in the last stages of spasmodic cholera is detrimental ; as it excites an action, in degree more violent by far than the exhausted constitution can bear, and thereby produces death more quickly than it would otherwise have occurred, had that remedy not been applied : that the hot bath in the commencement of the disease, like all other active remedies may be serviceable, I have no doubt ; with natives however the horror of the remedy is so great that I have not, especially after what I have related, ventured to repeat it.

I have, I see, said that the draughts were repeated according to circumstances—by this I mean, that whilst vomiting, purging or spasm have continued they have been given every half hour, or hour, according to their effect. The symptoms which are characteristic of this disease in its commencement are in general readily over come, but if the disease have been permitted to run on till the constitution becomes sunk and exhausted, medicine has not appeared to me to possess any power over such a state.

I trust, Sir, you will excuse the numerous faults I have no doubt will be apparent in this communication, which is written in a hurry ; but I have endeavoured to bring to your notice as many particulars as I could remember, concerning a disease hitherto so fatal to us. I shall feel in the highest degree obliged by any suggestion you may favour me with.

P. S. I enclose a list of all cases which have occurred in the pettah and native lines. I have distributed bolusses of opium and camphor, &c. in various places, but the natives do not, I learn, in general apply for them. Several circumstances have occurred in the attacks at this station tending to prove the disease contagious : great numbers of men who have been attending on sick friends have lately been attacked ; and it has generally happened that one person in a family having been attacked, others in the same house have almost immediately afterwards sickened with the complaint.

Asst. Surg. W. Train, Ghooty, February 1820.

Memorandum of Cases admitted into Hospital with the Epidemic at Ghooty, and of those who have died in the Town and Native Lines, from the best accounts I could obtain.

Date.		Admitted into Hospital.			Of whom died			Died in the Native Lines.			Died in the Pettah.				
											Mussulmans.			Hindoos.	
	Europeans.	Men.	Women.	Children.	Men.	Women.	Children.	Men.	Women.	Children.	Men.	Women.	Children.	Men.	Women.
1820 Feb.															
2		1			0			0	0	0	0	0		0	0
3		1			2			0	0	0	0	0		0	0
4		0			0			5	8	4	0	0		0	0
5		0			0			0	0	0	1	1		0	1
6		1	1		1			1	5	0	3	0		1	1
7		1			0			0	0	0	2	2		2	0
8		2			0			0	2	0	1	2		1	1
9		8			3			0	0	0	5	2		0	0
10		0			4			0	0	0	1	1		4	2
11		0			1			0	0	0	2	0		3	0
12		0			0			0	0	0	2	0		5	0
13		11			6			1	1	0	0	0		3	1
14		8			6			0	0	0	2	0		2	2
15	1	6			9			1	5	1	0	2		4	1
16		10			5			0	5	0	2	0		0	0
17		0			1			0	0	0	1	1		2	0
18		5			4			0	1	0	2	0		2	0
19		10			5			0	4	1	1	2		1	1
20		2			3			0	3	1	0	0		0	0
Total..	1	66	1		50			8	34	7	25	13		30	10

The epidemic made its appearance at Ghooty on the 2d, immediately after the departure of the 1st Battalion 16th Regiment N. I. amongst whom the disease had been prevalent for some time.

The mortality amongst those admitted into hospital, has principally been caused by delay in reporting themselves sick; many of them having come for aid when they were completely exhausted by the long continuance of the disease.

I have been the only European attacked, and having taken the disease early, it did not prove obstinate.

The attacks have shewn a great disposition to run in families, and even among the attendants on the sick, and have in such cases been much more severe than usual. The disease altogether, has appeared to go through its course with much greater celerity than has been usual, even with it, on other occasions.

Asst. Surg. C. Currie, Vellore, 1st November 1818.

I have the honor to acquaint you, for the information of the Medical Board, that the Spasmodic Cholera, appeared at this station, about the 18th of last month. Few casualties have hitherto occurred among the native population, when put in competition, with the mortality at Arcot and Chittoor.

The disease, although, in some instances, very severe, has readily given way to medicine, provided early application for relief was solicited. A few who died, under my own immediate care, were beyond all chance of recovery, when brought for assistance:

The two first cases of my journal, are transmitted to shew the advantages of bleeding, in removing or mitigating spasm. When they came under my notice, I entertained doubts, as to their being cases of Spasmodic Cholera, from the absence of purging; Mr. Burton also doubted; at the same time, the symptoms, in every other particular, so exactly corresponded with those of the complaint, added to the rapid recovery of my patients, that we were disposed to believe, it could be no other. To ascertain this point, I wrote to some of my professional friends, and Mr. Sutton, who seems to have had a wide field for observation, informs me, he has seen several natives, with incessant retching, but no purging whatever. I understand, a similar modification of the disease, has been witnessed, at some other stations of the army. Number 7 of the journal, is a third case, where, I am well satisfied, venesection proved serviceable; the same want of bowel affection existed.

Several of the Native Soldiers, were attacked, first, with Diarrhœa. A few in this state, had the disease cut short, by proper means, and none have been

Asst Surg. C. Currie, Vellore, 1st November 1818.

included, as cases of Spasmodic Cholera, unless cramps were present; however, I am persuaded, some of the men, who had Diarrhæa, would have suffered, from irritability of stomach, and spasms, had an early demand for medicine, not been made.

While I profess myself an advocate for bleeding, I am well aware the good effects to be expected from it, depend, not only on the age and constitution of the patient, but also, on seeing him, as soon after being attacked, as practicable; I have not observed any native, where, in my judgment, venesection, was either requisite, or proper. It is true, the men of the 2d Native Veteran Battalion, are generally, old, and infirm; however, Mr. Burton, has not ventured, to bleed a man of his Corps, who for the most part, are young, and healthy.

Mr. Smith Young, at Arungabad, is enthusiastic, in his recommendation of venesection, having bled one man, with famine, and pestilence, in his looks, and another, who had attained his 76th year. I confess, I should hesitate, before attempting the evacuation, with people, such as described by Mr. Young, and it certainly requires the test of farther experience, to establish the operation of phlebotomy, as a cure for Spasmodic Cholera, when the patient is far advanced in life, or reduced by poverty. Several of those who died here, could not have been bled, unless the jugular vein, or temporal artery, had been opened; the circulation had ceased in the extremities, and I feel convinced, had the most skilful medical officer, belonging to the service, hazarded the experiment, he would at least, have hastened dissolution. One of Mr. Burton's men, had no pulse at the wrist for two days, yet he recovered. Many of the natives, before applying for relief, have been ill some hours; when this is the case, to bleed, would be madness, according to my opinion of the nature of the epidemic; the spasm has then affected the larger vessels, and the exhibition of strong stimuli, can alone restore the balance of the circulation, and warmth to the trunk and extremities.

Major Marriott, Paymaster of Stipends, requested me to visit an attendant, belonging to the deposed Kandyan King, who had been seized with the epidemic. When I saw him, he had the usual symptoms, characteristic of the disease, but of an aggravated form; the jaws were completely locked, and considerable force was necessary to pass a piece of wood between the teeth, to separate them. This individual recovered by employing the warm bath, stimulating frictions, and administering 30 drops of laudanum every hour, until, the cramp of the belly abated, and the jaws became relaxed; he also received 20 grains of calomel. The vomiting and purging ceased, before trismus appeared; he voided nine lumbrici, the day subsequent to his illness, after a dose of castor oil. No. 9 of the journal is another case, where trismus was present; the subject of it, was much too late for any remedy, to be serviceable.

Asst. Surgeon J. J. Duncan, Arcot, October 1818.

The disease called the Spasmodic Cholera, having made its appearance with great severity amongst the Recruits, composing the Cavalry Depot at Arcot, on the 14th October, and as it was found utterly impossible from the great pressure of business, and continual attendance to relate separately each case, I have presumed, therefore, to give a general statement of the disease, and the treatment which was put in force, against this formidable malady. The following were the *general* symptoms when admitted into hospital—A *pale* contracted countenance, eyes sunk in their orbits, fixed, and of a glassy appearance, no pulse at the wrist or temples, and scarcely perceptible on placing the hand over the seat of the heart, skin always extremely cold, but sometimes preternaturally dry,—at other times, covered with a clammy sweat, tongue foul, great anxiety, much difficulty of breathing, continual restlessness and complaint of heat (like a live coal) at the precordia, incessant thirst, (every moment calling for cold water), and in many cases either a constant inclination to go to stool, or to eject upwards a whitish coloured fluid, exactly resembling milk and water, when mixed in the proportions of *two* of the latter, and *one* of the former;

Asst. Surgeon J. J. Duncan, Arcot, October 1818.

and attended with great prostration of strength, and in almost every instance, with complete loss of hearing. The disease although severe, in any respect has not as yet been accompanied with *spasms* ; and almost every man that suffered by it, retained his senses to the latest period of his existence. The above symptoms, generally attended those patients, who had had the disease for any length of time (about 6 *hours*), and who were so excessively debilitated on their arrival at the hospital, that no medicine proved to be of any avail; in fact they were dead to all intents and purposes, and their admission into hospital a piece of ceremony, where they died a few hours afterwards. The only difference in the symptoms of those that survived was, that the disease not having been of so long standing, the pulse could be slightly felt fluttering at the wrist, and the skin not so deadly cold as before described ; however, many cases recovered that came into hospital without pulse, and remained actually without any at the wrists for 24 and 36 hours —no casualty occurred amongst those men who were brought in *within 6 hours* of the attack ; which circumstance I have taken particular care to ascertain, if the accounts given by the relations of the patients are to be taken into consideration.

General Treatment.

As the cases that were admitted into hospital laboured under the most extreme degree of debility, accompanied with (in general) irritation, either in the stomach, or bowels. The following draught was instantly given.

℞ Tinct. opii. gtts. LXXX.
Spts. oryzæ (arrack) ℥i.
Ol. menth. pip. gtts. vi.

The above draught, once or twice repeated, generally allayed the irritation in the stomach and bowels; when it was followed up by a mixture of

Spt. oryzæ (arrack).
Aq. fervent. ℥i
Piper. nigri ℈ii
Capsic. Ann. ʒss,

and about an ounce of syrup to make it palatable. This mixture was given every half hour, accompanied with bags of hot sand to the chest, feet, and hands; cumlies all over the body, and occasionally (when great pain was felt at the præcordia), frictions of sp. terebinth were applied to the part. Under this treatment, almost every patient gradually recovered ; but when symptoms of amendment were not perceptible after 6 or 8 hours, doses of carbon. ammoniæ. spt. æther sulphur. aq. ammoniæ, &c. in the quantity of grs. x, were added to the other medicines every second hour, and with the greatest benefit. When the thirst was great, (which almost every patient complained of very much) hot congee was given, two or three spoonfuls being administered at a time. As soon as the natural warmth of the body was excited by these means, and the pulse had returned to the wrist, injections of a purgative quality were exhibited, and when the stomach permitted, an infusion of senna and manna was given to bring on a healthy action in the intestinal canal. During the whole course of the disease, I did not observe *one* case that could have been benefited by calomel ! however, to a patient who was extremely low, from frequent vomiting, attended with very great irritation in the stomach and bowels, calomel was exhibited in ℈i doses, with tinct. opii. &c. according to Mr. Corbyn's system, but with evident disadvantage; the calomel having been *instantly* rejected, although the plain draughts of tinct. opii were generally retained a quarter of an hour. The calomel was repeated twice. Out of 57 cases treated on the stimulating plan, 13 died, every one of which was beyond the power of medicine ; having been (as before mentioned) upwards of 6 hours sick, before application was made for medical aid : in fact from what I have seen of the disease, I am perfectly convinced that not a casualty would have occurred, had the patient been brought to the hospital within 3 or 4 hours after the attack. Amongst the fatal cases only *one* made urine during the whole pro-

Asst. Surg. J. J. Duncan, Arcot, October 1818.

gress of the disease, although two or three were upwards of 3 days sick. Of those that recovered, the urine was not voided, till the biliary secretion, and consequently the bowels were brought into a healthy state; some having remained 48 hours without making any.

I beg leave to remark before concluding this paper, that one circumstance appeared amongst the symptoms, not observed in any of the late publications—which is, vomiting of very large round worms (teres). Out of 5 patients who ejected them, one casualty took place. The first case of this kind, came into hospital with a severe attack of Cholera, which was checked by the usual remedies; but a few hours afterwards, was again suddenly and violently seized with vomiting, when *one* worm, about 12 inches in length was thrown out, and afterwards *four* more at different periods; the fluid ejected with the worms, being exactly the same in appearance, as before described. Taking the whole of the symptoms of the above case into consideration, I have no doubt but the irritation of the worms, produced the relapse.

I am sorry I had no opportunity of ascertaining by dissection the morbid appearances produced by the disease; but am of opinion, that many of the fatal cases, terminated in congestion in the lungs.

This dreadful malady, which appeared in the Depot on the 14th ultimo, broke out on the same day, that the wind changed from the south west, to the monsoon quarter, the north east. The weather was very variable, with sudden squalls of wind, and torrents of rain. The sun very seldom made its appearance, but there was a peculiar chilly sensation in the atmosphere altho' the thermometer did not fall lower in the middle of the day, than 74 deg. of Fahrenheit. It is remarkable, that the eastern end of the Cantonment was visited first with the Cholera and it gradually proceeded in a western direction. The people in the bazar, having been attacked on the 13th, the Cavalry Depot on the 14th, the 25th Dragoons on the 16th, and the 5th Regiment Native Cavalry on the 17th. No abatement took place till the 23d, the day following a dreadful gale of wind, (accompanied with rain,) which blew from the *south west.* The disease commenced the day before the full moon, and abated immediately after the change.

N. B.—One case died in a comatose state—blisters to the nape of the neck, head and calves of the legs proved of no avail.

Asst. Surgeon J. T. Conran, Arcot, November 1818.

In the above report, twenty one cases of Epidemic Cholera are described ---none of the cases are to be considered as minute details, in which every symptom has been related---a minute history of each case would have been impossible during the constant calls for attendance upon a large number of sick---my attention being at the same time directed to the superintendence of an establishment for the relief of the native inhabitants---to the above twenty one cases, must be added four of the Veterinary Establishment, amounting together to twenty five--- out of this number five have died---three of the five cases (Nos. 12, 13, and 21.) were admitted at a period of the disease when medical assistance is in general unavailing—this will leave two unsuccessful cases out of twenty three, in whom there was a prospect of relief—as far therefore as the success of any practice is a sufficient proof in its favor, I apprehend, upon a comparison with other reports, that I shall stand justified for mine—Mr. Superintending Surgeon Baillie established an hospital for the relief of the native inhabitants---the medicines for this establishment were supplied, and the practice directed by me, under the superintendence of Mr. Baillie-- the same practice as detailed in the above cases was pursued---no great number of patients came into the hospital, owing to the disinclination of the natives to all such establishments—when we saw this, one of the practitioners was kept at the hospital, and the other constantly sent round the village to administer to such as should be taken ill---in this way they were most happy to receive

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medicine ; and it was consequently given to some hundreds, who were seized with the epidemic---the reports of these cases were constantly made to me ; and the average loss by death, among those who took the medicines, and followed the directions given them, was about eight in a hundred.

The epidemic, as it occurred under my observation, is precisely such as it has so repeatedly been described, with one remarkable difference, namely, the total absence of spasm or cramp, in every case---unless the diminished circulation in the extreme vessels should be considered as the effect of spasm in those vessels ; like the imaginary spasm of Cullen in the cold fit of fever---The diminished energy of all the vital powers will however sufficiently account for this effect ; all the other symptoms were present ; the rapid depression of the vital powers, the watery vomiting and purging, thirst, the desire for cool drink, impaired hearing, restlessness, in many the heat at stomach, and in others the complete suppression of the excretion of urine—in the above enumeration of symptoms I have purposely placed first, the rapid depression of the vital powers, because it seemed to me by far the most essential part of the disease ; —the vomiting and purging were but secondary compared to it ; many patients died, having vomited and purged but two or three times, which, under no ordinary circumstances could have been sufficient to exhaust life ; and in one of the worst cases which came under my observation, there was no vomiting at all ; the suppression of the secretion of bile and urine appeared to me the consequence of diminished energy, as well as the more obvious symptoms of impaired hearing, and diminished circulation in the smaller vessels ; the indications of cure, therefore, were to relieve the irritation of the stomach and bowels (in which there was scarcely ever any difficulty), and at the same time to rouse the vital powers; which if effected, would effectually relieve internal congestion ; subsequently, to re-establish the healthy action of the stomach and bowels—according to these indications, I always gave in the first instance a draught composed of one drachm of laudanum, and fifteen or twenty drops of essence of peppermint mixed in six drachms of water ; if the vomiting and purging was allayed, pure stimulants were then the only means employed ; if the vomiting or purging continued, the same dose of laudanum was repeated as often as might be necessary ; the draught composed of two scruples of black pepper and one of chillies, mixed with an ounce and half of brandy or arrack and water, I found a most useful stimulant ; æther and ammonia were sometimes added ; externally, frictions, blisters, and bottles of hot water were applied ; the latter I found the most convenient mode of applying heat, as any degree could be produced without the disagreeable attendant of moisture ; when the danger of immediate dissolution from debility was overcome, calomel, senna and tinct. of jalap were used as purgatives, but calomel was never given at the beginning of the disease, as in that stage, to quiet irritation and to rouse the depressed powers of life, were the exclusive objects attended to.

Asst. Surgeon J. T. Conran, Arcot, December 1818.

The symptoms of the epidemic have varied this month from those of October, inasmuch as there has been less of vomiting ; in a great proportion of the cases none at all ; the evacuations by stool were exactly of the same kind as those of last month ; being all either watery, or like dirty conjee, unmixed with a particle of bile ; the disease was characterised by the same suddenness of attack, and the prostration of strength succeeded nearly as quickly ; I say nearly, for the disease had certainly abated somewhat of its severity, compared with those cases which occurred in the commencement of the epidemic at this station ; it will be seen, by my return, that out of eighteen cases two have died, and neither of those applied until twelve hours after the attack ; one of them also a very weakly subject, fifty five years of age ; both these cases would in all probability have recovered, if they had applied in time ; in all these cases my practice has been the same as that of last month ; in the first instance, I always gave the draught of laudanum and peppermint, one drachm of the former and 15 or 20 drops of the latter ; to this was added a little æther, if the debility was alarming ; the evacuations

Asst Surgeon J. T. Conran, Arcot, December 1818.

being stopt, pure stimuli were trusted to; such as the draught composed, of red and black pepper, &c. to which sometimes æther, and sometimes ammonia was added; brandy, arrack, either pure, or mixed with water, and given warm; externally warm cumlies, bottles of hot water, and blisters; being in charge of the establishment for the relief of the inhabitants of this place attacked with the epidemic, the same practice was pursued in several hundred cases; and among all these, taking those who applied late and early, the deaths have been about four and a half in the hundred.

Supg. Surg. J. Goldie, Trichinopoly, 20th February 1819.

In compliance with your instructions, communicated to me in your Secretary's letter dated the 10th January 1819, I beg leave to submit the following statement of the commencement, progress and decline of the epidemic termed Spasmodic Cholera, which has proved so fatal in this Division; I have also ventured to express the opinion I am consequently induced to hold on the question, whether this epidemic is to be considered as contagious, or communicated from one body to another.

The first case of Epidemic Cholera which came to my notice occurred in a sepoy of the 25th N. I., who belonged to a company returning from Detachment to Madras; this man had been seized previous to his arrival, and the company had lost, I think, two men on the march by the epidemic---a day or two after, on the 1st November, another sepoy was taken ill at Pootoor and died--about the 5th I heard of several cases in the village of Warriore, and Pootoor---particularly amongst the washermen's families, some of which proved quickly fatal, and before the medicine that had been issued for them could be administered; a few fatal cases at the same time occurred, outside the north west gate of the fort, towards the river. From that period, the number of cases daily encreased, and the epidemic gradually extended itself from the north west, to the south east gate of the fort---The barracks of the European Pensioners and Veteran Battalion, are situated in the near vicinity of the river gate of the fort; betwixt the 9th and 16th of November, 9 of the former and 46 of the latter were taken ill---a few cases occurred in the Artillery barrack to the southward of the fort, about the 13th--and the epidemic did not manifest itself in the barracks of H. M. 53d, which is situated on elevated ground on the south west side of the cantonment, till the night of the 16th. From the Cutwall's report of casualties in the fort of Trichinopoly alone, the number of deaths on the 10th November were 33; these had encreased on the 15th to 68, and after that period to the 22d, from 74 to 93 perished daily; on one day only, the 20th, 117 died; after the 22d, the casualties gradually diminished, to the 30th, when the deaths amounted to 20 only, and continued on the decrease after that period-- In the Province of Tanjore this epidemic shewed itself at Nagore about the 10th---Mr. Assistant Surgeon White had not seen any cases at Combaconum before the 22d, when the epidemic was at its height at Trichinopoly; and at a still later period, its appearance at Tanjore was reported to me; it had however commenced its ravages in the northern parts of that country. Towards the close of November the epidemic appeared at Madura, and in the vicinity of Ramnad, but no cases were observed at Palamcottah previous to the beginning of January.

From the different reports I have received, and the best observations I have been able to form, the epidemic has been comparatively mild in its effects on the coast, and its vicinity, and its violence encreased as we advanced into the interior, particularly on the banks of rivers; and its fatality was most conspicuous in the vicinity of hills and such places, where the endemic fever of the country is known to prevail. This may in some measure be attributed to the enfeebled constitutions of the inhabitants---an idea which is farther supported, by the well known fact, that the aged, infirm, and debilitated portion of the population, from penury or other causes, have been the great sufferers. Thus far amongst Europeans, I think those who have been in the habit of indulging to excess in spirituous liquors have chiefly fallen

Supg. Surg. J. Goldie, Trichinopoly. 20th February 1818.

victims to the epidemic—In my attempts to trace the progress of the epidemic through the country, I cannot perceive that it has advanced by any particular channel---It certainly appeared at Trichinopoly first, in the company of sepoys that had come in from the northward---but in a very few days after their arrival, the Collector of Trichinopoly read to me a report from some populous villages on the north bank of the Cavery, and considerably to the eastward of Trichinopoly, quite detached from any frequented road, where the epidemic was then prevailing with considerable mortality---It seems also to have occurred in the line from Trichinopoly to Nagore nearly about the same period, and it is a singular fact, reported by Mr. Henderson, that the epidemic was severe in the town of Nagore 10 or 12 days, before a single case occurred at Negapatam only 4 miles distant---It is also well ascertained that when it has been very prevalent in one village, another in its near vicinity, with which there was free communication, has, for many days after, been entirely exempted. This was exemplified even in streets at Trichinopoly, one being sickly, and another immediately contiguous, not affected.

About the middle of January the epidemic again recurred, in a moderated degree, at Trichinopoly, and about the same day at Combaconum and Negapatam, with nearly its former violence ; it continued for two or three days only, and again declined rapidly.---This reappearance, and rapid decline of the epidemic seems to me quite incongruous with the doctrine of contagion.

The servants employed in attendance on the sick, suffering under the Epidemic Cholera, were unceasingly occupied in the use of frictions, and rubbing the patients with stimulant applications generally for many succeeding hours after their admission. The sick of H. M. 53d Regiment suffering from the epidemic, were indiscriminately mixed with the other patients, and there was not an instance of either a servant, or patient, in the neighbouring cots, being infected. At Combaconum, Negapatam, Madura and Palamcottah, medical servants were equally exempt from the epidemic, and but a very few individuals employed in administering relief to the inhabitants suffered at Trichinopoly. I am therefore of opinion, that the Spasmodic Cholera is not communicated from one person to another, by the touch, or exposure, at a specific distance, to any noxious effluvia proceeding from the person infected. I consider this epidemic as entirely unconnected with any peculiarity of the atmosphere at present known, and that like the epidemics, and influenzas which have prevailed at different periods, and spread through the different nations of Europe, though the effect be fatally obvious, the cause is yet involved in impenetrable obscurity.

Asst. Surg. MacLean, H. M. 53d Regiment, Trichinopoly, November 1818.

Since the 13th, the Spasmodic Cholera has prevailed most. Many of the cases were very severe ; in some every sign of life almost extinct, on admission into the hospital within the space of a few hours. The symptoms were, vomiting and purging of a watery fluid, pain at the pit of the stomach, thirst, spasms of the extremities and muscles of the abdomen, great prostration of strength, coldness of the extremities, small and frequent pulse, eyes turgid and sunk into the socket, and in the last stage of protracted cases, delirium. My first attention was directed to restoring the stomach and bowels to their usual healthy action, and removing the spasms—for this purpose, from 15 to 20 grains of calomel was administered, and washed down with tinct. opii from 60 to 100 drops, (according to the urgency of the symptoms,) olei menth. piper. 15 to 20 drops, and camphor mixture ℥ii, to be repeated as often as the stomach rejects it, *without the oil of peppermint (which in many cases seemed to add to the distressing sensation of burning heat at the pit of the stomach.)*

This, in many instances, put a stop to the spasms and vomiting in a few hours. In more severe cases, blistering and friction with the grounds of the antispasmodic tincture over the stomach, was attended with the most decided benefit in putting a stop to the cramp and vomiting.

Asst. Surg. MacLean, H. M. 53d Regiment, Trichinopoly, November 1818.

The propriety of bleeding was strongly impressed on my mind, from observing the turgid state of the vessels of the several viscera of the thorax and abdomen, as demonstrated by dissections, together with the advice contained in the Medical Board's Circular to Superintending Surgeons. Of fifty six cases of Spasmodic Cholera, who were bled to fainting, only one died—small bleedings are prejudicial, inducing debility without relieving the system; and I am induced to say, as my opinion, that a second bleeding does no good, if protracted beyond 6 or 8 hours after the first—we should therefore bleed largely, or not at all.

Friction with pounded chillies and garlic, mixed with the grounds of the antispasmodic mixture, I found the best application for restoring the heat and circulation to the extremities. It is not sufficient to restore the heat and pulse; it must be persevered in, until the stomach and bowels assume their healthy action, there being a great disposition to sinking until that is the case; coolies should therefore be constantly with the patient, and after the heat, &c. is restored, continue the friction 15 minutes every hour.

I have used brandy alone, and mixed with warm water and spices, and also æther, but cannot say that I ever saw much benefit accrue from their use.

This disease appears much more manageable among the Natives, than Europeans—of 30 Natives, I had at different periods under my care, only one man died, a puckally; he was the second patient I had seen labouring under this dire disease. And such men as had been in the habit of using spirits in excess, suffered most, even among the Europeans; indeed few of them ever recovered, unless seen within a few hours, at most 4 or 5 hours. The weather during the prevalence of this disease, has been wet and cold.

Asst. Surg. R. Hunter, Tanjore, 26th November 1818.

Since I last had the honor of addressing you, no case of Spasmodic Cholera has taken place either in my own practice or in that of any of the native doctors under my superintendence; a number of instances of a disease, exhibiting very different features have occurred, though equally rapid in their course and fatal in their termination, with the spasmodic disease, if not promptly assisted by medicine; as in these, the symptoms so materially varied from those characterising the spasmodic affection, and the treatment proportionably differed, I trust I shall be excused in giving an account of its usual course, as witnessed by myself and reported to me by the native doctors, to whom the treatment of several of the cases devolved, and of the practice which was found to be the most beneficial on its attack.

Without any previous indisposition, and in many instances after taking their usual evening meal, the patient has a sudden call to stool, when he passes without either griping or tenesmus, a quantity of a clay coloured matter of the consistence of thick cream, this is soon followed by a vomiting of either the food he has swallowed, or of a slimy tasteless fluid. The evacuation per anum is perfectly without smell, neither accompanied with tenesmus, or preceded by any griping or other pain of the abdomen. When any pain did occur, it was very trifling and only was observed in a few cases. The vomiting and purging are speedily renewed, and if medicine is not immediately applied, sudden and very great prostration of strength ensues; the skin and extremities become cold and clammy, the pulse sinks and soon is imperceptible at the wrist; the eyes are fixed and glassy, rarely suffused; the stools are passed involuntarily, and still of the same appearance as at first, and in a short time the patient becomes insensible, and expires.

This is the usual course of this disease, which universally exhibits the same progression in its symptoms, though frequently of very different duration in different subjects. In very few of the fatal cases did the patient live 12 hours after the first attack; in others, death happened in a much shorter period, and in one (the brother of a servant of Colonel Blackburne's) it terminated fatally within one hour.

Asst. Surg. R Hunter, Tanjore, 26th November 1818.

The subject of this singular case, had taken his evening meal with his brother, and afterwards had sat up, conversing with him, until 12 (midnight); he then rose and went out, where he remained for a few minutes; on his return to the house, he complained of feeling very unwell, fell down and was seized with vomiting, which in a few minutes was followed by purging; this was, after a short time, renewed, and he expired within the hour. Whether from the alarm or any other cause, the brother was also taken ill the next morning, but, by timely application for assistance, he is now recovered.

The treatment adopted was the exhibition of small doses of laudanum (from 15 to 20 drops) every ten minutes, in two table spoonfuls of brandy, and the same quantity of camphorated mixture; this was continued for some time after the pulse regained its usual strength, and the skin its natural temperature.

The limbs were well rubbed, either with hot salt, or with warm brandy and pounded chillies. The abdomen was covered with a poultice of fresh chillies and garlic, well beaten together, and sinapisms applied to the inside of each leg, from the knee to the ancle. Fumigation, by means of the vapour of brandy and camphor was also directed to the body—&c. confined by cumlies; heated bricks or bottles with hot water were tied to the feet. If the vomiting or purging reappeared, from 50 to 100 drops of laudanum were exhibited per anum, according to the urgency of the symptoms, every half hour, in half a pint of congee water.

On the first appearance of the disease, the warm bath was used, but without any good effect; indeed in one case, it was evidently attended with danger.

No calomel was employed, as from a consideration of the above detailed symptoms, it did not appear to belong to that class of stimuli, from which, being permanent, much advantage could be expected in a disease so rapid.

In one case, where there was considerable determination to the head and suffusion of the eyes, the temporal artery was opened, and about six ounces of blood abstracted. The practice appeared pernicious from the patient sinking shortly afterwards.

Ass't. Surg. T. Cother, Ramnad, January 1819.

The four fatal cases of Spasmodic Cholera, were unfortunately not brought to the hospital, till the disease had been allowed to proceed too far for any medical aid to be effectual, as they all died in a very short time after they arrived, and were very old men.

The other case of this dreadful diosrder readily yielded to the means recommended in the circular letter from the Medical Board, joined to the use of the fumigation, and of which I cannot speak too highly in praise, as it was astonishing to see the truly beneficial effect of it; the impeded circulation being almost always gradually restored (although in nearly every case the pulse was hardly perceptible at the wrist) and this was usually the precursor of a stool tinged with bile; so soon as this made its appearance, every dangerous symptom vanished, and a dose of castor oil completed the cure. The warm medicated bath has been used with great advantage, but its use has been in a great degree superseded, by the superiority of the fumigation, as well as its convenience, except in a few particular instances.

The treatment of this disorder amongst the native inhabitancy has been very successful, scarcely a single fatal case having occurred where they have been brought to the pandals within any reasonable time after the attack; out of 292 who have been brought, 14 only have died, and these were suffered to remain at their homes till all the usual means employed were ineffectual. It is very distressing to observe the amazing apathy which pervades a very great proportion of these infatuated people, numbers of them having fallen victims to their rejec-

Asst. Surg. T. Cother, Ramnad, January 1818.

tion of the means which have preserved so many of their fellow creatures? Expedients have been exhausted in endeavouring to convince them of their folly, but all have proved unavailing. Vytians and Hakeems of different casts and respectability, have been entertained, instructed, and supplied with medicines, &c. to administer to the sick at their own houses, but even this, has been attended with little comparative advantage ; and eight or ten are now dying daily in the fort of Ramnad alone. At the different populous villages in the districts, the same unhappy circumstances have taken place ; and it was not till a vast number of people had paid the forfeiture of their existence, to their obstinacy, that they would make use of the medicines, &c. which the benevolence of Government so generously put within their reach. On a tour through the Shevagungah Zumeendary, whither I had gone for the purpose of seeing that the pandals, &c. &c. were prepared, I saw it exemplified in almost every village I went through ; in one of which (Yaleeangoody) a great many persons had died, and still they refused the assistance which was proffered them. By accident a man happened to be taken ill as I was passing along the road, and having some calomel and laudanum in my palanqueen, I gave him some, and sent him to the native doctor ; when I returned the next morning, he was well ; and then, many of them came to the pandal ; since which, numbers have been restored to their families, who would in all probability have slept with their fathers, had it not been for this accidental circumstance ; such is the horrible prejudice of this darkly ignorant and bigoted race of people.

As far as regards number, it would appear that this awful visitation has been very favourable in Ramnad and Shevagungah, in comparison with others on which they border : generally speaking, the Cholera has been observed to take the course of the rivers, more or less ; and has always been more destructive in villages whose situations are low, and contiguous to wet paddy fields. In some of the largest and most populous places whose sites are elevated, it has not as yet appeared at all, though at the distance of only ten or twelve miles ; in places otherwise situated, it has been very prevalent. From the intelligence I am now in possession of, I am inclined to think that it is already on the decline, and I sincerely trust that 'ere long, we shall be free from this most unwelcome visitor.

Asst. Surgeon R. Neilson, Madura, 14th August 1821.

The epidemic, which appeared in the Fort in the beginning of December 1820, continued prevalent in January, and the greater part of February 1821. It broke out among the Prisoners in the end of January, and in the space of three weeks, thirty two men were attacked. Ten men died, and the others recovered.

In many cases, of the epidemic among the inhabitants, the spasms were very slight, and the patient scarcely complained of them ; but great prostration of strength, and depression of the vis vitæ came on at an early period, and rapidly encreased. Such cases generally proved fatal. The absence of spasm may be ascribed to the oppressed state of the sensorium, and diminished sensibility, rendering the nervous energy less capable of excitement.

In several cases of the epidemic, the laudanum only was employed to arrest its progress, and the calomel was entirely laid aside, till the attack had subsided. A dose of calomel and jalap was afterwards exhibited as a purgative. This plan appeared to answer better than giving a large dose of calomel at the commencement of the attack, for I have often suspected that it produced irritation of the stomach, and vomiting, which would not otherwise have happened, although the laudanum was exhibited immediately after it.

Surgeon Mitchell, M. D. Palamcottah, February 1819.

In delineating the progress of the Cholera Spasmodica which has so lately prevailed among us, I deem it necessary to observe, that it made its first appearance in the fort of Palamcottah, among the sepoys of the 2d Battalion 7th Regiment N. I. on the morning of the 5th January, and a havildar of the 2d company was its first victim ; during the first week from the 5th to the 12th inclusive

Surgeon Mitchell, M. D. Palamcottah, February 1819.

six sepoys only were taken sick. The second week, from the 13th to the 19th inclusive, eight more were attacked ; and the third week, viz. from 19th to 26th, the numbers cured amounted to 10. It deserves notice, that during these three first weeks the encrease seems to have been gradual and the increment 2—observing the proportion of 6, 8, 10. But on the fourth week from the 26th to the 2d February, the numbers fell to 7, and indeed after the 30th, no fresh cases were admitted. So that the disease may be said to have continued from the 5th to the 30th January, and that it was on the encrease for the first three weeks, and on the decline in the fourth—and the total of sick during that period was 31 sepoys, vide return. The epidemic attacked the natives in the fort a day or two before the sepoys, and was heard of at Walnaud, a village ten miles distant in an easterly direction, two or three days previous to its entering the fort. As far as I can learn, the epidemic appears to have made its approaches by neither of the great roads, so that it becomes difficult to determine whether we had it from Madura, or Ramnad. It commenced its ravages to the eastward and a little north of the fort, and spread pretty generally through the small, low, dirty and close houses in every direction. The hospital seems to have escaped its influence, probably because it stood on high ground and was very open all around, for certainly none of the sick, although upwards of 90 at that time, were seized with Cholera. It is true one of the orderlies fell a victim to it, but he was in the habit of absenting himself from the hospital at night, so nothing can be inferred from his case. None of the others had the least symptom of it, and neither myself, nor three assistants caught the complaint, though employed day and night in the hospital.

It strikes me, it must have been propagated through the atmosphere, much in the same way as intermittent and remittent fevers are communicated, and from my own observations on the extensive sloughing of ulcers, I am disposed to consider them as having a similar origin. In the case of ulcers, both in Ceylon and at Palamcottah, I have noticed that in close and sultry weather, and also before falls of rain, they are much aggravated, and extend rapidly ; and it struck me forcibly that the days on which the Cholera was most virulent, maintained the same aspect ; there was much close and sultry weather, and the sun was obscured by whitish clouds nearly the whole day.

From the above statement, it evidently results that the Cholera cannot be traced to contagion.

Had contagion been concerned in its production, we should have looked for it in the direction of the roads, and conveyed by different passengers from one place to another.

We should have expected to have found it in our hospital, as I at first was obliged from want of room to put the Cholera cases among the other sick in the hospital, and surely some sort of infection should have been manifested in attacking those who attended the sick both night and day.

I must therefore conclude that contagion cannot be the medium of propagation in this epidemic ; unless indeed the word contagion be taken in the loose unqualified sense it often bears. If a medical officer look upon intermittent and remittent fever as contagious, then also may Cholera be regarded in the same light.

Asst. Surg. J. Chalmers, Palamcottah, 10th February 1819.

I have been favored with your circular letter accompanied by instructions relative to the application of Mr. Dalton's vapor bath, and a new method of exciting vesication by means of one of the mineral acids.

With respect to the enquiries of the Medical Board, on the subject of contagion, I fear I have but little satisfactory information to offer, so defective is our knowledge of the nature or operation of miasmata.

I am however satisfied in my own mind that the Spasmodic Cholera is

Asst. Surg. J. Chalmers, Palamcottah, 10th February 1819.

not communicated from one person to another by the touch; or by the person in health inhaling, or being otherwise exposed, within any specific distance, to any noxious effluvia, or other baneful influence, from the person affected with the disease; and I am led to this conclusion, from the circumstance, noticed by Mr. Corbyn, viz. that none of the medical servants in this district, suffered from their attendance on the sick.

It is mentioned, that the Resident of Travancore, at the suggestion of the chief medical officer in that country, had, under a conviction I presume, of the contagious nature of the disease, formed a line of circumvallation round that country, by the interdiction of all communication from without; but the result of that experiment has, I fear, proved nothing in support of the original impression.

We must therefore, I infer, attribute the spreading of the spasmodic cholera, to the agency of some more general, though hitherto unknown cause.

The complaint commenced its ravages in this district, as far as I can learn, about the 25th December last, in the populous town of Veerdoopetty 70 miles north of Palamcottah, and at the same time, in the small village of Walnaud, only about 7 miles distant in a N. E. direction from the same place, leaving the intermediate space and population free from sickness.

From these two places it proceeded gradually, East, West, and South, until few places of any note had escaped.

On the sea coast and in the midland parts of the district, it has been comparatively mild in its effects; but in the towns under the hills, where perhaps the constitutions of the inhabitants are more impaired by the fevers to which they are annually exposed, its ravages have been severe indeed.

It is lamentable to state that about 4000 casualties from Cholera alone, are reported to have occurred in the district since the commencement of this severe affliction; but I am happy to be able to add, that it now appears to be every where on the decline.

P. S. It is a curious fact, that in the towns near the hills where the epidemic was so fatal, a disease occurred amongst the cattle, which kept pace with, and often exceeded in mortality, that of the human species.

Asst. Surg. J. Chalmers, Tinnevelly, 21st May 1820.

I have to acknowledge the receipt of your letter dated the 1st instant, directing me by order of the Board, to prosecute my observations on the effects of external heat in cases of Spasmodic Cholera, with due regard to sundry circumstances therein mentioned.

In reply to which I am happy to say, that the epidemic appears just now to have quitted Palamcottah and its vicinity entirely; but in event of its reappearance, I shall not fail to attend to the several circumstances pointed out by the Board for my guidance.

In the mean time, I beg to submit the following remarks, which have occasionally come under my observation while attending cases of this disease.

I. With regard to the application of external heat.

When the epidemic first appeared at Palamcottah in January 1819, my lamented friend, the late Dr. Mitchell and I, after an attentive perusal of all the documents in circulation, and in our possession, agreed on the mode of treatment to be adopted by us, and being fully prepared to meet the evil, treated it according to the then existing ideas of the complaint, by the diligent application of the most approved remedies.

Dr. Mitchell's patients were chiefly the natives of his corps; mine, the prisoners in jail, and inhabitants in my neighbourhood, brought to an hospital

Asst. Surg. J. Chalmers, Tinnevelly, 21st May 1820.

fitted up for their reception in my own compound. The ward which Dr. Mitchell had appropriated to the cases of the epidemic was naturally close, the doors and windows were kept shut, and the temperature of the air in it, regulated, night and day, by fires.

The jail, as well as the hospital in my compound, (a new stable) were both open in front, at least they were only shut up with leaves, so that both places were at that season of the year, comparatively cold, especially at night.

Dr. Mitchell slept in his hospital, had the best orderlies and servants, and was himself most attentive, giving up his whole and undivided time to the sick; whereas my attentions were then much divided, I had wretched servants, and found my sick often much neglected by them, especially at night.

Yet my poor friend Dr. Mitchell, lost all his patients, while I, under what I considered as disadvantages, at the time, had the good fortune to save several.

The inference appears to me obvious, viz. that his patients were exhausted by the heat, while mine not only breathed a purer air, but by being more exposed, the moisture of the surface was checked, and the consequent exhaustion thereby retarded, in place of being accelerated by heat, frictions, cumlies and frequent immersions in the hot bath.

In the same month, and when the air is generally very cool, and sometimes moist, I had an opportunity of witnessing a case in point, viz. on visiting a village man in my neighbourhood, to whom I had previously sent a dose of calomel and laudanum, I found the poor man had taken these, but that all my other instructions relative to the application of external heat, had been completely neglected. The man was on a cot, in the pyal of his house, exposed to a current of cold air, he was cold, covered with sweat, without any pulse at the wrist, nearly naked, and no one was near him. After calling and expostulating with his friends, but evidently in vain, I retired, and was not a little surprized to hear next day, of his perfect recovery.

Another case, was that of a servant of mine, who, on his return to his house in the evening, having bathed in hot water, was immediately after seized with the epidemic, and died during the night; nor from all I could learn, did it appear that this man had at all exposed himself after bathing.

Another, apparently in point also, was that of a rich native in Tinnevelly, who having been seized with the Cholera early in the morning, shortly afterwards performed his usual ablutions in cold water, and yet survived.

Farther, the late Mr. Dalgas, on receiving charge of the 7th, from Dr. Mitchell, pursued the same mode of treatment, as that of his worthy predecessor, but was equally unsuccessful.

At length, I succeeded Mr. Dalgas, and fearful of deviating from a mode of practice, which appeared then to be established by general consent, yet less diligent, or more indifferent as to the application of external heat, was so fortunate as to save a few of my patients; which induced me on the next visit of the epidemic, to abandon altogether the use of the vapour and hot baths, the teazing with frictions, and covering with cumlies, unless desired by the patient; and the result, though far from triumphant, is so far satisfactory, that in place of losing all, I have since only lost about one in six.

2. With regard to the temperature of the surface, at the time of application of external heat, I regret to say, that I had only twice an opportunity of seeing a patient with the epidemic, who had not already become quite cold.

3. To the vapour, and warm baths, to the use of frictions, and the covering with cumlies, unless agreeable to the patient, I beg to offer the following, which appear to me serious objections.

Asst. Surg. J Chalmers, Tinnevelly, 21st May 1820.

1st. They seem to me to encrease the relaxation of the skin, and the cold perspiration, and thereby to accelerate the exhaustion, so much to be dreaded.

2d. The patient frequently sinks on being taken out of the bath.

3d. Placing the patient in an erect position, which is sometimes more or less necessary while removing him from his cot to the bath, is often attended by fainting, from which he sometimes does not recover.

4th. Most epidemic patients have an unconquerable aversion to the warm bath, and I have known many of them, who were apparently comatose at the time, roar out with horror, at the apprehension of being immersed in it. Indeed be the surface ever so cold, they generally appear intolerant of the application of external heat of any sort, and as its officious application may, in many instances, tend to prevent, what of all things is most desirable—sleep; I think it is best done by heated sand or ashes, in an old soft cloth, applied by the attendants, in the gentlest manner possible, all over the surface.

5th. The latter remark seems equally applicable to the use of frictions, and the covering of the patient with cumlies, neither of which should be persevered in, unless in the gentlest manner, and agreeable to the patient himself. Should the spasms be severe, he will often entreat to be rubbed, and in that case frictions can do no harm, at least as far as sleep is concerned.

4. With regard to the rise and progress of the epidemic at Palamcottah, during its late visit, I have been unable to remark any thing different from its previous appearance here, or at any other place; unless it be that the phases of the moon appear to have considerable influence on the disease.

Travellers also seem on all occasions to be more obnoxious to its attacks than residents, and seem capable of carrying with them, to a considerable distance, a sort of infected cholera atmosphere, which is at all times liable to affect them, or those near them.

Thus far it may be said to be contagious, but that again seems to depend more on predisposition than any other contagion with which we are acquainted.

One thing however I fear, is certain, viz. That we are as yet, as little acquainted with its origin, as we are with its cure—E. G. "I read from Bombay that a number of cases of the epidemic have lately appeared on the Island, but that its mode of treatment is now so well understood, that its reappearance causes no alarm;" at the same time I hear from the Camp of a Corps now on its march "we lose about 10 people a day, no one returns alive from the hospital tent, and our doctor says, there is no cure for it". One medical man, boldly estimates his cures by thousands! while his no less zealous neighbour is heard to say, though he has followed the same plan of treatment, that he has failed throughout.

Having thus submitted to the Board all that I have as yet remarked, regarding this dreadful scourge, it may not be superfluous to add, in few words, the treatment pursued in my hospitals; that, in event of any part of it appearing to the Board, injudicious, I may be corrected, for which be assured I shall feel most grateful.

1st. I bleed if possible, and freely.

2d. Give ℈i or 25 grs. calomel, washed down with 60 drops of prepared laudanum (with camphor, and ol. menth pip.)

4th. Should this be rejected a dose of æther sulphuric.

5th. And again the calomel and laudanum, if necessary.

6th. The stomach is rubbed with a tincture composed of cantharides, garlic, and other acrid substances.

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7th. Heated sand or ashes in a soft cloth, applied gently to the extremities, and surface, in general.

8th. Anodyne glysters, if indicated.

9th. So soon as the patient awakes from his first nap, a smart purge of jalap, or aloes.

10th. If the spams are severe, a camphor and opium pill, every one or two hours.

For drink, the patient has first warm congee with ginger or spirits, and then good mulloogatauny.

Asst. Surg. England, Palamcottah, 22d & 28th February 1819.

I beg leave to forward you a list of the cases of Cholera Spasmodica of the 1st Battalion 15th Regiment N. I. which have come under my observation, and beg you will excuse me from sending any detailed history of them, for a few days, being continually occupied with the sick. The cases, I imagine, of most of those, which proved fatal, would have had a happier termination, had medical aid been sought for at an earlier period of the disease; on minute enquiries I have found, that one or more of the following symptoms prevail some hours, and often a whole day, previous to the appearance of more formidable ones. Nausea, or slight vomiting, pain occasionally across the forehead, and almost invariably about the epigastrium, diarrhœa, sometimes accompanied with extreme langour pervading the whole system, the patient indulges in a propensity to remain quiet, and undisturbed, not being often-times in any considerable degree of pain, nor apprehensive of the sudden invasion of the formidable symptoms which usually succeed these; to this latter circumstance I attribute the chief foundation for Cholera Spasmodica. I have chosen for my return three distinct columns for the different stages of the disease, which digression I hope you will excuse. The first stage, or primary symptoms, evidently denote a derangement and impaired action of some part of the alimentary canal, which is usually relieved in the period of an hour or two, by opiates and a calomel purge. In the second stage I embrace the following symptoms; frequent or incessant vomiting and purging of a watery or wheyish fluid, hurried respiration, anxiety of mind, pain and burning sensation over the larger curvature of the stomach, extending often to the umbilicus; frequent spasmodic contraction of the muscles of the extremities, accompanied with the most excruciating torture, skin usually cold, and clammy, pulse extremely depressed, and not perceptible at the wrist, pupils of the eyes often contracted, with a sensation of giddiness in the head; a perfect possession of the mental faculties; the eye-balls often somewhat depressed in their sockets, and occasional distortions of the muscles of the face. In the third stage I comprehend the following symptoms. Hippocratical countenance, total deprivation of heat, and sensibility of the surface of the body, even on the application of the most powerful caustics; cessation of vomiting, excepting when the chest leans forward, purging continues, and is involuntary; respiration scarcely perceptible, no spasms, excepting with few individuals, whose constitutions are usually robust; pupils of the eyes dilated, and the eye balls depressed, no contraction of the pupils on exposure to a strong light; pulse imperceptible, and often also the action of the heart, and respiratory muscles; sometimes hiccup intervenes on the approach of death, which then generally ensues in thirty or forty minutes. In the last stage of this disease, I have found my practice quite unsuccessful, but, in the second much more fortunate, and, in the first always so; I have made several trials of the vapour of sulphuric æther since I last had the pleasure of communicating with you, and I believe it has assisted in quickening the circulatory system, and conjoined with the practice pointed out by the Medical Board, I think that some reliance may be placed in it. When a reaction of the system has been obtained, and the vomiting and purging has still remained unabated, I have been induced to use frictions of large proportions

Asst. Surg. England, Palamcottah, 22d & 28th February 1819.

of mercurial ointment, combined with a few grains of hydrargyri oxymurias, and have given internally, small and repeated doses of the latter medicine, conjoined with opiates; wherever I have succeeded in promoting ptyalism, the patient became relieved, and recovered.

With regard to the proximate cause of this disease I have scarcely an opinion to give, but, I am disposed to entertain an idea that it may be an impaired action of the cutaneous vessels, produced by a morbid state of the atmosphere; it does not appear to be contagious, for, during a long period after the arrival of our Battalion at Palamcottah, we were the only inhabitants which suffered from it, although our sepoys had frequent intercourse with the natives of the place; indeed, if the disease could be propagated by contagion, it would be natural to expect more cases amongst the attendants of those afflicted with it, which occurrence I have observed, is equally as rare, as with others who have no communication with them. On inspection of the bodies after death, the morbid appearances are variable, but, I believe the stomach and duodenum are more usually diseased than other parts of the viscera.

On the examination of a cingalese servant of mine, who had suffered most severerly from Spasmodic Cholera, and, who survived the attack five days, in a most hopeless state, I found the great curvature of the stomach eroded—the liver much enlarged, the gall-bladder of enormous dimensions, and containing about nine ounces of a brown grumous fluid, resembling thin pea-soup in colour, and consistence, which, being dropped on powdered chunam gave but an extreme faint yellow colour.

Asst. Surg. England, in continuation.

You have no doubt heard of the fatal catastrophe which befel a small recruiting party lately detached from this corps, consisting, I believe, of twelve souls, of which, Captain Pateshall, Lieutenant Herring, and six sepoys were attacked with cholera, amongst whom, only one sepoy recovered—he was attended by me, and, brought to Palamcottah for the purpose, which was about twenty one miles distant from the place where this disease committed such ravages in the above-named party—Captain P. was brought to me about twenty hours after the attack, in a delirious state, without any perceptible pulsation at the wrist, and, with profuse cold perspirations; the countenance was much dejected, the eyes dim, pupils greatly dilated, and insensible to the strongest light, indicating pressure on the brain, produced, I imagine, from a loss of tone in the extreme vessels of that viscus, thereby retarding the natural progress of the circulation in that organ. Most probably inflammation has existed previously in the brain, as the latter organ generally participates in disease, with the stomach, as, indeed, with almost all, inflammatory diseases; but, when I saw him, all such symptoms had ceased, indeed, the vomiting and purging, and every symptom of irritability in the alimentary system had vanished; Lieutenant H. was brought dead to Palamcottah. The symptoms which both these gentlemen experienced at first, were, as far as I can learn, of a mild nature, and Lieutenant H. (the last attacked) whilst assisting Captain Pateshall, remarked to the latter, that he felt unwell himself, but from the slightness of the symptoms, he had no reason to be apprehensive of danger; about four or five hours after this observation of Lieutenant Herring's, he was himself attacked with unceasing vomiting and purging of a watery fluid, which terminated fatally in the period of 8 hours. I forgot to observe that Captain P. was similarly afflicted, but, I imagine somewhat less severely; they were supplied with various medicines, but, what they made use of, I have not precisely ascertained; from the history of one of the sepoys who accompanied them, I am disposed to conclude that tincture opii. was alone administered, and, in extremely small quantities.

Surgeon J. Wyse, Cannanore, 24th January 1819.

A much greater quantity of rain than usual had fallen in the last monsoon, and the weather at Cannanore during the month of October, and the greater part of November was sultry and calm, but the land winds began to blow with some force towards the end of the latter month, and the atmosphere became loaded with clouds, for a few days, from which we had a little rain; the night air, towards the morning, was very chill, and the natives complained of the cold. At this time we heard that the epidemic was raging with great violence in Mysoor, Manantoddy, and Trichinopoly; H. M. 69th Regiment had marched into the cantonment some days before. The epidemic had attacked this regiment on the banks of the Muddoor, first having appeared amongst the followers and a detachment of native troops. And although the disease had not appeared in its lines after it descended the Ghaut, yet we were told that this regiment brought it into all the towns through which it had marched; but the 69th did not bring it to us, and I consider its occurrence on the rout of that corps as accidental.

In the end of November, or very early in December, the cutwal of Cannanore, reported to the Commanding Officer, that the epidemic had broken out in Tellicherry, and carried off about 20 or 25 persons daily.

In conversation with Colonel Forbes, regarding the measures which should be adopted with such a formidable disease in our neighbourhood, it was agreed to shun whatever might create, or increase alarm; and as native reports are often inaccurate, that I should write to Mr. Surgeon Dyer for a correct statement of the epidemic at his station. In his reply, he ascribes much of the distress experienced there, to fear, and states the mortality at not more than 5 or 6 a day. This report confirmed us in our purpose of abstaining from all proclamations and preparations which might create alarm.

In the meantime the Colonel very judiciously agreed to all the requisitions of the inhabitants to be permitted to perform propitiatory sacrifices and processions, conceiving them to be powerful means of quieting their minds. The population were already placed under the safeguards of religious confidence: When on the 5th at night, and 6th of December in the night, two or three persons were carried to my house from the most distant angle of the town of Cannanore, a distance of two miles, evidently attacked with the Epidemic Cholera. They were saved. I visited the spot next morning and prescribed for about 8 or 10 more in their own houses, with success. The inhabitants of this angle are fishermen and christians, and I had no prejudices of cast to combat in my practice.

I repeated my visit in the evening and found several more affected.

The next and the following day the disease increased; I then took a house, and established local hospitals, according to my official report already sent in.

The following were the most remarkable symptoms; a sudden sense of debility, and bending of the limbs, no longer able to sustain the weight of the body, an uneasy sensation about the stomach, soon followed by a vomiting and purging of water.

Sometimes the vomiting preceded, sometimes the purging. The features shrunk, and put on a ghastly expression of *horrific fear*.

The arms hung down, as it were, lifeless, and the legs were equally lax. Cold, clammy sweats appeared on the head, hands, and feet, with great chilliness, and gradually prevailed over the whole body; the voice became feeble and was soon lost. The pulse sunk lower and lower till it ceased at the wrist, &c. The tongue was seldom parched, and in no instance did any of the patients complain of thirst, or demand cold drink. I observed no tonic spasms A very few had slight cramps in their legs, no general convulsions occurred, and indeed the fibres seemed in a state of asthenic relaxation, as if their irritability had been suddenly destroyed.

No urine was voided. The sensorium was not affected, and the animal

Surgeon J. Wyse, Cannanore, 24th January 1819.

functions, while the vital power was strong enough for their exertion, appeared undisturbed.

If the patient was not speedily relieved, he sunk rapidly, and expired without a struggle.

All the patients who received our aid, had previously swallowed large doses of pepper, and cardamums, or both, and some of them, arrack.

By the advice and instructions of Mr. Superintending Surgeon Dalton, I had prepared several gallons of what I called the antispasmodic mixture.

A composition of laudanum, oil of peppermint, camphor, and arrack, which had been found of great service at other stations.

I had also prepared cots and cumlies, and arrack, and camphor, &c. for the spirituous vapor bath so strongly recommended by him, and so clearly described.

From what I had heard, and read of the disease, and its treatment, I had made up my mind to follow three principal intentions in my practice.

1st. To restrain the inordinate actions of the stomach, and intestines, as soon as possible.

2d. To check the rapid declension of the vital powers.

3d. To support the system, and restore its healthy functions, at leisure, after the immediate danger was removed; with these views, as soon as a patient was found to be attacked, a dose of the antispasmodic mixture, containing 80 drops of laudanum, &c. was given. This in general stopt the vomiting and purging at *once.* Sometimes it was rejected by the stomach, but on a repetition, never failed to produce this effect. I never had occasion to give it oftener than 3 times to stop those morbid actions. In all cases where the pulse was obscure and extremities cold, the vapor bath was used with great benefit; I made some observations regarding its efficiency and application, and shall subjoin some strictures on its use and management. Occasional doses of hot arrack and water were administered, and frictions with cumlies as well as the vapor bath, repeated and continued till the vital powers seemed roused sufficiently to supply the animal heat by their own agency. After the violent actions of the primæ viæ had been quieted for an hour, or two, or three hours, in the observance of which periods we were directed by the sleeping, or restleness of the patients, &c. ten grains of calomel mixed with 20 of rhubarb, were given in hot rice gruel. I began by giving a scruple of calomel in powder, but as it very often reproduced the vomiting, I diminished the dose as above, by which means it remained on the stomach.

The patient was kept under this treatment till the natural evacuations reappeared, and he had regained a little strength.

Indeed, most of them were impatient to be discharged, as soon as the first danger was over, and many expressed a strong desire for food as soon as the vomiting ceased. The calomel brought away great numbers of worms from several of them. Indeed worms are so common on this coast that every native who takes a dose of castor oil, may expect to void them.

Several persons were picked up in the streets affected with the epidemic, nearly dead; *none of them recovered.* Several of them died on the vapor bath. It would not be candid to throw any imputation on our remedies, from such failures as these. I went from house to house, and had native practitioners constantly employed the same way. So far as I am able to judge, the persons who benefited by our aid in their own houses, bear a threefold or fourfold proportion to our hospital patients. The proportional mortality was not quite so great; indeed these poor destitute wretches, who probably had had no food for

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some days before, and whom we were obliged to support, while they lived, form the greatest portion of our casualties. The disease did not extend itself as we had reason to apprehend. It first appeared amongst the christians who did not refuse our aid. It afterwards attacked the mapilas. These people still suffer, but refuse all foreign assistance, and from the secresy of their modes of living, and particular prejudices, we cannot ascertain their losses, but there is reason to believe that they diminish daily amongst them, as well as amongst the other casts.

In nine days after the formation of the local hospitals, so few applied for medical aid, it was deemed inexpedient to continue them, but one vytian and an attendant cooley were employed for 4 days at the request of the inhabitants of Kakut, and administered successfully to 35 patients.

In the employment of the spirituous vapor bath, the following observations occurred. While I was pleased with the simplicity of the apparatus, and the promptitude of its application, I had not considered its properties scientifically. Some facts were obtruded on my notice, by its use, which suggested the following reflections. Several of the patients, as I have stated, died in the vapor bath, and as I have already hinted, could scarcely be expected to be recovered, but in a state so low, had we not done an injury by involving them in a vitiated atmosphere? In this disease, and others in which a quick application of diffused caloric is so desirable, this bath *seems* to offer greater advantages than any other means I know.

But let us not forget that by the combustion of the spirits and camphor, &c., we envelope the patient, placed above the lamps, in steam and carbonic acid gas. He is obliged to respire an atmosphere deprived of its due proportion of oxygen, and surcharged with carbonic acid gas. I remarked that some of the patients treated in the vapor bath, soon afterwards complained of coldness, and actually felt chilly. In these cases the bath was repeated; but it was of consequence to ascertain the cause of this very sudden reduction of temperature, where it was so desirable to keep it high. The water, formed by the combination of the oxygen with the hydrogen of the inflammable liquors, is largely deposited on the clothes of the patient, which may be felt quite wet after the process. Now when the lamps are extinguished and the supply of caloric interrupted, evaporation instantly begins from the damp clothes, and sinks their temperature, and dissipates the animal heat of the patient surrounded by them, too suddenly to be safe in his condition.

To obviate this occurrence, I would propose the removal of the patient to another cot, and that his clothes be changed for dry ones, immediately.

In making these observations and strictures, I beg not to be understood as pretending to bring forward objections sufficient to countervail the advantages expected from the vapor bath, but simply to point out what is worthy of the attention of the judicious practitioner in its application. The addition of oil of cinnamon, or of any other volatile inflammable oil to the spirit lamps is a very unnecessary expense. It might be of some use were the oil to be simply evaporated, but the combustion which it undergoes in the spirit lamps reduces it, like the other ingredients, to carbonic acid gas and steam.

I think myself authorised to state as the result of all the information which a diligent enquiry into the subject has put in my possession, that very few instances of the epidemic are now to be found at this station.

Surgeon Mather, Cochin, 1st January 1819.

Return of the Sick, admitted into the Epidemic Establishment at Cochin, in the month of December 1818.

Date.	Disease Spasmodic Cholera.	Number.	
1818, From the 9th to the 31st inclusive.	Admitted		317
	Cured	282	
	Dead	28	
	Remaining	7	
		Total	317

Account of the symptoms and treatment of Spasmodic Cholera.

1. Symptoms—The symptoms have been, vomiting or purging, or both, of a more or less whitish watery fluid—coldness of the surface of the body, especially of the lower extremities, great prostration of strength; in the worst cases the pulse imperceptible at the wrist; constant thirst, with a white and sometimes thickly furred tongue; a burning sensation at the stomach, more or less extended through the alimentary canal; in a few cases, spasms in the lower extremities as well as abdominal muscles, but more frequently, so far as may be inferred from the seat of pain, in the stomach alone, sometimes but more rarely in the arms or fingers only, or in the long muscles of the back extending the length of the spine; sometimes a pricking sensation in the ear, others deafness; in a few instances a degree of vertiginous affection, accompanied in a single instance with a sense of weight in the head; in some, great restlessness with quick and oppressed respiration; in others, a state of quiescence approaching to syncope, with the breathing hardly perceptible; the eyes sunk in their socket, and, invariably preceding death, a clammy perspiration, with a peculiar sense of inelasticity to the touch In some of the fatal cases no urine was passed, nor in some of the successful ones till the operation of a purgative; and in two instances there was an involuntary flow of urine not long before death.

2. In the milder cases, the heat was but slightly diminished; and in some was increased, with a frequent pulse; the vomiting or purging was moderate; there was no spasm, or sense of heat in the stomach or intestines, though sometimes pain, or a griping sensation in the bowels; and the diminution of strength did not amount to more than simple languor.

3. Treatment—In general the stimulant tincture, according to the formula recommended by Mr. Surgeon Scot, was the sole remedy; but in all the more serious cases, 15 or 20 grains of calomel were put upon the tongue, and washed down with ℥ss of the tincture in ℥ss of warm conjee In case of these being rejected, they were sometimes repeated, with the precaution of giving the tincture with conjee slowly, or in two or three draughts at short intervals; but 80 drops of laudanum with 20 of ess. of peppermint, and ℥ss of brandy in conjee were more frequently given in preference, and invariably in the event of the second dose of calomel and tincture being thrown up, commonly, with success.—The calomel in powder seemed sometimes to keep up, if not to induce vomiting; but formed into a small flattened soft cake with a little boiled rice, was retained. In some cases where the strength was little reduced, and the heat undiminished, 8 grains of calomel in the first instance was of use in procuring fœcal evacuations in four or five hours. Injections of ʒss of laudanum in ℥iv of conjee were often of service when the vomiting and purging were urgent; frequent small quantities of brandy with conjee were of use in checking the vomiting, and larger ones in affording support in an exhausted state. These

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remedies were given a second time, after the interval of half an hour, according to the urgency of the symptoms ; and in the severe cases, the full dose of laudanum, without the calomel, was commonly repeated several times.

4. The medicated hot water bath was frequently used, but on a trial of the vapor bath, or steaming cot, recommended, it appeared to possess such advantages in power and facility, with a small comparative degree of fatigue to the patient, that I have since chiefly made use of it. The process it would seem may be advantageously simplified by merely placing two bowlshaped chatties with a quantity of burning spirit under the cot ; and as, with a full quantity, the stimulus is very considerable before profuse perspiration is produced, it is advisable to regulate the heat, according to the more or less exhausted state of the subject, by the whole quantity at once, or repeated smaller portions—I have considered the successful termination of three cases, in which the pulse at the wrist could not be felt for many hours, which seemed utterly hopeless, as indebted principally to the repeated use of this remedy. The subjects were, a woman, and two men. One of the latter, a stout muscular boatman, after having been four times on the steaming cot, had a remarkably strong throbbing of the heart, with heat so intense, if I may be allowed the expression, of the thorax, the sides in particular, as to equal if not exceed that of the most violent local inflammation ; while, at the same time, the lower extremities were cold, respiration was hurried, there was incessant restlessness, and acute pain in the course of the spine. With the view of equalizing the circulation, the man was placed the fifth time, on the steaming cot, with a determination to bleed, if unsuccessful. On removal from the cot, there was a return of warmth in the lower extremities, the heat was more equable over the chest, and the breathing less laborious. It was not however till some hours afterwards, about 10 o'clock in the morning, that the change was complete. The pulse had then returned to the wrist, and sleep soon followed.

5. Bleeding was employed with success in one case, in a very advanced stage of the disease. The patient, who was not more than 18 years of age, complained of giddiness, with a sense of weight in the head ; he was restless, and breathed with difficulty ; he had been twice on the steaming cot, but the pulse remained undistinguishable, and the skin continued cold. I succeeded in drawing about ℥12 of blood from the arm—for no pulsation could be felt in any of the branches of the temporal artery, and I did not consider this a case in which I could with propriety open the jugular vein—I was surprised to find the blood had that bluish appearance, indicating the formation of buff, but after coagulation, though the surface had the tenacity of sizy blood, the colour instead of being buffy was a darkish grey or ash, and exhibited an appearance I do not recollect having ever before witnessed. The weight in the head was somewhat relieved by bleeding, the pulse was just perceptible ; though still restless, sleep took place at short intervals ; the natural heat was gradually restored ; and at length uninterrupted repose succeeded.

6. Liquid blister was occasionally applied to the epigastrium, but the hot water blister appeared to be more powerful, and frictions of the body generally with a tincture of chillies and camphor, as well as fomentations, were used with advantage, to second the power of the bath intending to restore the vital energy.

7. Magnesia in the quantity of a drachm was given for the sense of heat in the alimentary canal with some advantage, but the effect appeared to be increased by the addition of 50 drops of laudanum.

8. Castor oil, with a portion of spirit and tincture of senna, rhubarb with tincture of jalap, and sometimes 6 or 8 grains of calomel, were found to answer well as purgatives.

9. Remarks—The uniformity as to *time*, with which the crisis took place in all the severe cases which had a favorable result, was most striking. It was, I believe, invariably from 1, to 3 o'clock in the morning.

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10. Among the anomalous symptoms noticed under the head of *milder cases*, that of an increased heat of the skin at the time of the characteristic vomiting and purging, with a pulse more frequent, and perhaps, if at all altered in volume, rather fuller than natural circumstances, which have always justified a favorable prognosis; it may be observed, that such a dose of calomel, as might have a purgative effect was considered as strongly indicated, and that 6 or 8 grains were given with an effect, in general, fully answering the indication.

11. It may be proper to mention, a very singular occurrence. One of the victims to the prevailing deadly pest, had yielded life with so little effort, that the last moment could not be discerned, either by myself, or any of the by-standers. The peculiar fixed appearance of the eyes and countenance, soon however, rendered the fatal event but too evident. The face was covered, and in a few minutes, I went home. Nearly half an hour had elapsed, when I received a hasty message, that motion had been perceived in one of the feet of the deceased. I considered it mere illusion; but on my return, I clearly saw motion in one of the feet, as well as in one hand, and on grasping the arm, some of the muscles I found were in an obscurely tremulous state. The face and neck were stiff and cold, but the trunk, the chest in particular, was warm. Though nothing like action in the heart could be discovered, a vein in the arm was evident on pressure. I immediately opened that, as well as one in the other arm, and procured about an ounce of black half coagulated blood from the left arm, after which there was so much action in the flexor muscles of the right, as to slightly bend the fore-arm. The body was placed upon the steaming cot, as the last act of duty, with the result expected. The heat in the chest, gradually only, disappeared. Such an instance of partial muscular irritability, from what appeared to be simply local vitality, was forcibly striking, and served to strongly remind me of the effect produced on dead animals by the galvanic fluid.

12. In taking a survey of the ravages committed in the neighbourhood by this desolating epidemic, it is consolatory to learn, that great numbers of those attacked, have been cured in the first instance, by the medicine distributed in all directions for 20 or 30 miles from Cochin; and that owing to the precautionary measure, fortunately adopted by the Staff Surgeon, of giving instructions for the preparation of a quantity of the stimulant tincture for the time of need, hundreds, from all the accounts, have in all probability been rescued from death. It has been highly gratifying to find the great confidence the success of the remedy has inspired among the native population, and to see that confidence exemplified in the crowds from every quarter, that have daily pressed for a small supply.

Asst. Surg. Wight, Samulcottah 23d March 1822.

I had the honor some time ago, to transmit the case of Lieutenant M. who died of an attack of the Epidemic Cholera, which prevailed at this place, during the greater part of January last. I propose now, to lay before you, a general outline of that epidemical visitation.

The first case, was admitted into hospital, on the 2d of January. This case attracted little attention, as we had had several sporadic cases during the preceding six months. On the 5th, other two patients were brought, but both in such an advanced stage of the disease, that they died within a few hours after. On the 6th, other three patients were admitted, one of whom died. On the 7th, one, and died eight days after. On the 8th, two were admitted and both recovered. On the 9th, eight were attacked, six of whom died, one of them ten days after. On the 10th, three were admitted, and all recovered. On the 11th, one, and died. 12th, one, and recovered. 13th, one, died. 17th, two, both died within an hour or two after. 20th, one, he recovered. 25th, three, all recovered. 28th, one, recovered. 29th, one, died. 30th, one, recovered. This was the last patient we had.

The above table exhibits the disease as it occurred in the battalion. It raged to a considerably greater extent amongst the sepoys families and villagers.

Asst. Surg. Wight, Samulcotah, 22d March 1822.

I have not been able to ascertain accurately, the number of the former attacked, but of 66 cases, of whom accounts have been received, 43 died. According to the police returns, 219 villagers were taken ill, of whom 97 died. The number of sepoys attacked was fortunately small, as the degree of mortality was very little short of what took place in the village, 14 died of 31 who were attacked. Seven of these were brought in such an advanced stage of the disease, that they died within a few hours after their arrival. One man had actually lost the power of deglutition when brought; all the rest lived much longer, and three or four did not die until several days had elapsed.

The disease usually commenced with purging and vomiting, the evacuations being watery, and for the most part white coloured, in some they were dark, and in one or two cases, quite limpid. In two cases, the dejections were so thick as to resemble *soogee*; these proved mild cases.

These symptoms were soon followed by sinking of the pulse and heat, collapse over the surface, clammy perspiration, anxious breathing, and in a few cases, death without any other symptom, at least as far as could be ascertained. The generality of cases were however slower, and exhibited a greater variety of symptoms.

The head was never complained of, but the patient had usually an intoxicated appearance, being either unable to stand, or if he could, being unsteady; perhaps from vertigo. One patient, said that he was giddy from the commencement. The features were usually collapsed at an early stage of the disease, the eyes sunk and heavy. The vision was unaffected; but the sense of hearing was always very dull; tongue generally clean and moist, or but slightly furred; in one case it was dry and rough; in some the thirst was very urgent, while in others there was not the slightest desire for fluids. In a few, there was a peculiar burning heat of the stomach—but, in the plurality, this most distressing symptom, was absent. In some cases, there was pain of the epigastrium, and in others about the umbilicus, which was aggravated by pressure. The evacuations both upwards and downwards, were generally very frequent until checked by medicine. In some cases the stools were passed with considerable griping, but more commonly without pain, and in the advanced stages, involuntarily. Towards the conclusion of the epidemic, many patients convalescent from Cholera, were attacked with dysentery; nearly two-thirds of whom fell victims to it, in the village and sepoy lines; one patient died of it in hospital, another was twice attacked, but fortunately escaped.

The respiration, was generally quick and oppressed, but not from pain, as the patient could easily take a full inspiration when desired. In the advanced stages of the diseases, the oppression changed into difficulty; which was always a fatal symptom.

The pulsations, when they could be felt, were generally quick, and weak; in one or two instances, they were about the natural standard, and in two cases, they were greatly above it, both in force and frequency.

One of these patients, was labouring under the paroxysm of a quotidian, when brought to hospital. The other was affected with the most violent spasms of the whole body.

The heat in both these patients was considerably above the healthy standard, but in general, it was considerably below.

It began to sink on the extremities, from a very early stage, but sometimes continued unchanged on the trunk until a late period. Rubifacients almost invariably restored heat to the whole body, if the patient survived their application a sufficient length of time to allow them to act.

The return of heat, when so produced, did not always prove a favourable symptom, as several died within a few hours after the heat had even exceeded

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the healthy standard—In some the skin was dry, but generally it was covered with copious cold perspiration.

In a number of cases there was cramp of the lower extremities, and of the abdominal muscles. These *low* spasms were generally a bad symptom; there was one case, in which the spasms were general and violent. That patient had the most urgent thirst, but little vomiting or purging, Extreme restlessness was a frequent and generally, a bad symptom; several recovered after it had supervened.

Causes. The limited information to be derived from attending to the occurrences which a single local visitation of a widely spreading epidemic disease presents, can be of but little avail, in elucidating its nature, or in enabling us to deduce general conclusions, as to its causes or origin. But, as these are only to be deduced from an extensive series of observations, made by different individuals, at different places, and under different circumstances, I shall now add my mite to the general stock of information, already acquired on these topics.

Throughout the month of December, the prevailing winds were, during the night and early in the morning, almost due north, and exceedingly cold, apparently in consequence of their blowing first over a range of high hills, and then over a track of country, covered with water for the cultivation of rice; towards the end of December, and beginning of January, the degree of cold began evidently to diminish, probably from the water having dried up after the crops were cut; these winds abated early in the forenoon, and were succeed by fresh north easterly breezes which continued the rest of the day; these winds increased considerably in strength about the time the disease appeared. There was also about that time, occasional cloudy weather, but no rain; the clouds were never stationary, and kept moving in all directions.

The temperature was very regular. The range of a thermometer which was suspended in the hospital, and hung about 2 inches from the wall, being about 10°, when the disease was at its worst, and never exceeded 13° during January, in the 24 hours. As I had no barometer, or hygrometer, I can say nothing certain either of the density, or moisture of the atmosphere. It may however be observed, that there was much dew every morning, and water placed in a current of air, in porous vessels, did not become cold,* both of which are I believe sure indications of atmospherical moisture.

There was a considerable quantity of lightning in the north west quarter of the heavens, but no thunder. On the 19th there were indications of a thunder storm; black clouds collected towards evening, much lightning was seen, and a clap of thunder heard, but no rain fell. The weather did not become clear for some days after.

The first patient was admitted on the second; on the fifth, and sixth, five more were admitted; the moon was full on the sixth. Three only were admitted on the 7th and 8th, and on the 9th, the disease had attained its maximum; at least amongst the sepoys and camp followers. From that time it evidently declined, both in the number attacked, and in its violence. I have made the distinction of sepoys, and camp followers, because it was observed that at the commencement, the disease principally prevailed amongst them, while the villagers suffered comparatively little, and that it increased greatly among the latter, when it declined among the former. These alternations occurred twice, and the disease continued in the village after it had totally left the sepoys; does this

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* Might not a hygrometer, sufficiently accurate for ascertaining considerable variations of atmospheric moisture, be formed on this principle, by hanging two thermometers, for the sake of comparing together, the ball of one of them being covered with a piece of wet cambric or silk. The degree of cold produced by the evaporation would be in proportion to the dryness of the air; the greater the cold, the dryer the air; and vice versa, if the air be moist, the cold will be less. Had I possessed two thermometers, the experiment would have been tried, and the result communicated.

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circumstance account for the different degree of mortality between these two sets of people, the disease being most fatal at the commencement.

The disease broke out shortly after the junction of a very large detachment from Chicacole, and just at the time when another joined from Masulipatam. I am uncertain whether to attribute this circumstance to accidental coincidence, or to suppose that it was brought by these troops. The first patients were Samulcottah people, and there was not a single case that I heard of, in either of these detachments on the march. It is, I believe, generally denied that this disease is contagious, but when it is recollected, that it appeared first in the lines of the Battalion, and that for some time back, it has almost invariably attacked every body of men that has made a march of any distance, there is perhaps, some reason to suspect the accuracy of that opinion, at least on the present occasion. These people might not have had Cholera actually raging amongst them, although its fomites were present, and ready to be called into action, whenever favourable circumstances occurred. If this was the case, these seem to have been presented at Samulcottah, and consequently the disease immediately began to spread amongst those, with whom the strangers first associated, and then extended in all directions, while the circumstances favourable to its propagation lasted. What these circumstances were, I shall not attempt to explain. The facts abovementioned, seem to support the doctrine, so generally denied, that contagion assists in the spreading of this disease; but there are other circumstances which go far to show, that without the assistance of some other invisible agent, its effects are very trifling—thus, in the present instance, I have attempted to support the opinion, that the disease is contagious—But how are we, according to this view, to explain its sudden decrease without the adoption of any measures to produce this effect, at the period when it had arrived at its maximum of violence. The same thing has been observed in regard to every reputed contagious epidemic; not even excepting plague---which is as constantly found in Constantinople, as the small pox is in London, but which, like the latter, only prevails epidemically in particular seasons---and is at all other times, comparatively speaking, harmless ---It is therefore a desideratum, to ascertain the nature of this agent as, once known, means might be discovered to counteract in a greater or less degree, its operation on the human frame.

Mr. Orton has attempted to ascertain the nature of this agent, and after a most laborious and difficult investigation has arrived at the conclusion, that the cause of diseases spreading epidemically, is a deficiency of free electricity, in the atmosphere at those times and places—This view is certainly very ingenious, and is perhaps the most correct that has yet been promulgated; or rather indeed, it is the only one that has yet attempted to assign a definite cause for that, often observed, peculiarity in the spread of epidemic diseases, and of contagious epidemically---This however is a subject, to which I have as yet paid little attention; consequently I forbear to offer an opinion on it, farther than by stating, that I have not been able to explain according to it, several things which I have remarked in observing this disease---This is perhaps to be attributed rather to my ignorance of the manner of applying the theory, than to any defect on its part.

Much has been written concerning the proximate cause, by both Messrs. Jameson, and Orton---The former has scarcely attempted to ascertain what it is, or at all events, has come to no conclusion on the subject, but has filled several pages in showing what it is not---The latter, after a good deal of analogical reasoning, has concluded that the proximate cause of Cholera consists, 1st, in a deficiency of the energy of the nervous system; and 2dly, that the depreciation extends to all the functions, and so produces the disease---In a note to these conclusions, the author informs us, that he expresses by proximate cause, the essence of the disease, and the immediate origin of its symptoms; I am at a loss to conjecture how the essence of a thing can be its own cause; this I conceive to be impossible, and it is equally impossible, that any external agent can be the proximate cause of a disease. All external agents, whether noxious, or otherwise, act on the solids and

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fluids of which the body is composed through the medium of the vital power, energy, or influence. If this principle is withdrawn they cease to act. Hence it follows, that it is this principle which is the proximate cause of disease ; what the agents are that act so powerfully upon it in Cholera, remain I fear, still to be ascertained.

Treatment. On the general principles of the treatment of Cholera, I have little to say. Most of the remedies which I have employed, have been tried and recommended before. From the experience acquired in the present epidemic, I can neither add to, nor detract from former recommendations—They were uncommonly successful in some apparently hopeless cases, and on the contrary failed completely in other cases, where the circumstances appeared very favourable. The causes of these differences are often difficult to ascertain, even when the circumstances of the patients have admitted of their being minutely investigated during life, and their bodies examined after death ; but much more so when neither of these can be done.

In favorable circumstances for medical enquiry, a minute examination into the patient's previous history, and ailings, often point out the cause of these differences ; but in a regimental hospital, and particularly a native one, during the ravages of a rapidly fatal epidemic disease, such inquiries can seldom be made. In the hurry and confusion necessarily attendant on these occasions, the leading symptoms are usually all that are enquired about, to form a diagnosis. The general likeness of the disease being established, the medicines that have been found useful, are prescribed without attending to the minute circumstances of the case, on which alone an accurate diagnosis can be formed. Should it so happen that the constitutions, &c. of several patients are alike or nearly so, it is probable that they will all recover : but should it so happen, that one, or several cases occur, in which the circumstances are very different from the above, it is more than probable, that they will all fall victims, under the same treatment that saved the others ; this kind of practice, is I believe, called treating a name, and not the disease before us. This is what took place here on the ninth, and perhaps on many other occasions.—On that day, there were 8 persons attacked ; one of whom was a European officer, and I was myself unwell. I devoted the whole of my attention, as fas I was able, to the officer. The 7 natives we consequently, almost entirely consigned to the care of the Dressers. They were incapable of adapting the remedies, to any minute differences which the patients might have presented, even had there been leisure to examine into these differences ; and indiscriminately administered, the same medicines, and in nearly the same doses, to all. Five of the seven died. I do not wish however to infer from this, that the treatment would have been more successfully conducted, had I been able myself to have attended more closely to the hospital. There are no data to warrant this conclusion.

The remedies employed consisted of anodynes, administered by the mouth, and in clysters. Calomel, in various stages of the disease, and in doses, varying according to the symptoms.

Turpentine, as a cathartic, was administered in several cases. In some, it was of great service, and in others, the reverse. Rubifacients were used with great freedom, and generally with advantage. They were never observed to do harm, although sometimes the patients did not live long enough to allow them to do good. In more favorable circumstances, they generally relieved most of the urgent symptoms, and prolonged life.

Mercurial frictions were tried in some cases, and apparently with benefit. Blood-letting was tried in two cases, and they both recovered.

Two kinds of anodynes were always kept ready. The one was pills, composed of opium and camphor, of each 1 grain, combined with a little black pepper, to form them into a mass. The other, is a mixture of tinct. opii and aq. ammon. of each equal parts, with five grains of camphor dissolved in every drachm of laudanum ; of this, from two to three drachms was the usual dose, and repeated as occasion required.

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It was soon found, that the usual doses of these medicines, had almost no effect. They were therefore combined, and two or three of the pills were broken down, and given, with two or three drachms of the mixture ; from this time, the practice became rather more successful.

After the first symptoms were subdued by these means, calomel, in large doses was given, and often with excellent effect ; it generally produced copious dark stools, even at an early stage of the disease ; some of the patients died after that favourable symptom.

Two or three of the patients evacuated worms ; some by vomiting, others by stool. To them, turpentine was administered with the intention of its acting both as an anthelmintic and cathartic, and with great advantage. This success induced me to try it in others where there were no worms, but the result did not answer my expectations. Two or three of the patients shortly after died, although the symptoms were previously rather favourable. It is now impossible to say, that the result would have been different, had calomel been administered in preference ; but I am inclined to think that it would.

The first patient who was bled, was extremely emaciated and sickly. He had laboured under a quotidian for about 2 months, which came on regularly every afternoon. In this state he was attacked with watery vomiting and purging. These did not interrupt the usual paroxysm. He was brought to hospital with a quick and strong pulse, skin intensely hot, mouth parched ; having in short, the symptoms of a severe attack of fever, conjoined with symptoms of Cholera. Dr. Rogers and myself agreed in thinking that the treatment of this case ought to be commenced with a small bleeding ; a vein was therefore opened, and about 8 oz. of black dissolved blood abstracted. The bleeding was followed up, by calomel and opium, and frictions with camphorated mercurial ointment on the spine ; under this treatment both diseases were arrested ; but he was so much reduced between the desease and treatment, that it was several days before he showed signs of recovery ; from that time it was slow but progressive.

The other patient was a jemadar, a spare, but an active, muscular man, a mussulman ; he was attacked in the afternoon, with pain in his bowels. This gradually increased, and in an hour or two, spasms of the inferior extremities and of the abdominal muscles commenced ; these increased rapidly, until they had affected every muscle of his body, with the most violent convulsions, so much so, that it required several people to keep him in bed. These were combined with quick and bounding pulse, and the most urgent thirst. The paroxysms of spasm, lasted about 2 minutes, with an interval of about one, between them ; in this state I first saw him ; a vein was opened as soon as possible, and the blood allowed to flow from a very large orifice, until there was an evident mitigation of the symptoms, which took place after he had lost between two and three pounds ; a large dose of calomel and opium was then administered, which moved his bowels gently; he was convalescent next morning, but extremely weak, and complaining of a degree of soreness all over him ; he soon regained his strength.

The following outline will illustrate the foregoing remarks, and show the plan of treatment which was adopted in some of the worst cases.

The first patient was brought to hospital on the evening of the 2d January. He had felt himself giddy and sick all day—about 2 P. M. he was attacked with vomiting and purging of a dark watery fluid ; when he arrived in hospital he was in great fear for the event of his illness ; tongue dry and rough ; nausea ; pulse 140, weak, no pain, bowels puffy, and a gurgling noise when pressed ; skin dry, and coldish ; extremities cold ; features collapsed. Three of the anodyne pills were given, broken down in spirits, and in about an hour calomel grs. x pulv. antim. grs. iv. 3d, Soon after taking the opium he became warm, and perspired

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gently during the night; has vomited once, and purged twice towards morning. The pulsations have left the extremities, and are now scarcely perceptible in the thorax; complains much of thirst, and heat in his bowels; tinct. opii, tinct. digit., et aq. amm. aa ʒ i, aq. calid ℥ iv, were immediately given as an enema—powerful rubifacients composed of mustard and capsicum were applied along the spine, and to the extremities; the anodyne pills were repeated. The enema was immediately returned, and repeated. The second remained about an hour, and was then accompanied with a large dejection. The sinapisms quickly produced heat, which was gradually diffused over the whole surface, and the pulse again became full and distinct; vesp. calomel grs. x. opium grs. ii. 4th, Had a copious dark and feculent stool during the night, heat now natural, pulse 100 full at the wrists, some appetite. From this time his recovery was rapid, his bowels were opened with calomel the next three days, and on the ninth, he returned to his duty.

The next case worthy of record was that of a delicate lad about 19 years. He was admitted on the morning of the 6th, apparently almost lifeless; he was cold from head to foot, very restless, nearly inarticulate, and not the slightest pulsation to be felt in any part of him; vomiting and purging extremely frequent. Anodyne mixture ʒ ii after each evacuation; apply sinapisms with capsicum to the spine, and extremities. The sinapisms produced so much irritation, that he repeatedly pulled them off; they soon produced some degree of heat, and diminished the restlessness. In the evening his temperature was nearly of the natural standard, and the pulsations had returned to his extremities. The vomiting and purging, which had ceased for several hours, again returned in a slight degree; the anodyne and sinapisms were continued. 7th. Is feverish, tongue furred, pulse strong, heat considerable; calomel ℈ i stat. 8th. No stool from the calomel, but appears easier; habt. pulv. jalap comp. ʒss vesp. cathartic, has not operated, calomel grs. x, cras. mane. solut. salin. q. s. ut alvus respond. 9th. Had one dark feculent stool during the night, the salts have not yet operated. 10th. Had two stools from the salts yesterday, and one during the night, from a dose of calomel. Makes no complaint now, except of extreme weakness; rep solut salin. 11th. Salts purged him twice, appetite returning. rep. solut. 12th. Had three very black stools from the medicine. He is extremely weak but in other respects well.

From this time, he continued to gain strength daily, till the morning of the 28th, when he was attacked with dysenteric symptoms, viz mucous bloody stools, passed with severe gripes, skin hot, pulse quick; a dose of calomel and aloetic pill relieved these symptoms. In two days he had a relapse, accompanied with severe abdominal pain; leeches were applied, and the pill repeated; these again freed him from his complaint, and he had no return from that period. He is now doing his duty. This is one of the most remarkable and unexpected recoveries which I have yet met with. In the following case, the probability of a favorable termination was greater, but it proved otherwise.

Rajanaikcooloo, æt. 40, was admitted on the 7th of January about 9 A.M. He at that time felt himself so slightly unwell, that he told the dresser that he required no medicine, rest being all that was necessary. At that time the pulsations and heat were natural. In consequence of this favourable report I did not see him until about an hour after; before that time, the strength of the pulsations had diminished considerably; the heat was greatly below the natural standard and continued sinking, and slight cramps of his legs had come on. The purging, which commenced the night before, had stopped; an anodyne draught was immediately administered. Nitric acid, and sinapisms were applied to the greater part of his skin. These remedies removed the cramps, and restored heat, and his pulse was full and regular in the evening; he had several stools during the day. 8th. The heat has sunk considerably since last night, pulse distinct, had one watery stool this morning, no cramps, feet cold, calomel ℈ i, opium. grs. ii, stat. sum. 9th, The medicines produced one large dark stool yesterday; and he has passed another this morning, pulse distinct, heat natural, appetite returning, calomel grs. x. opium grs. i. 10th, Had no stool since last night; he appears rather

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feverish to day; ol. terebinth. ℥ ss. 11th, the turpentine operated three times, stools thin and dark; he is restless, and looks ill; features collapsed; slightly delirious; has a desire for food; sinapasms to the head; saline solution vesp. The solution has operated 3 times, stools black, habt. calomel grs. x.—and pulv. antimon grs. iv. 12th, has had one stool since last night, is restless, and uneasy, ℞ Ungt. hydrarg. camphorat. ʒii. to be well rubbed in, along the whole spine, and repeated three times a day; leeches to the temples; sinapisms to the whole surface; these things produced temporary abatement of the restlessness and delirium; they however returned with aggravation; on the 13th, he had violent delirium which resisted every means that I could think of, till the evening of the 14th when he died.

Is it probable that the termination of this case would have been more favourable, had calomel been used more freely, on the 8th and 9th, and other cathartics been used, on the 10th, in place of the turpentine? That medicine was given in consequence of its having produced very beneficial effects, in a patient who had vomited worms, only two days before. The disease in that patient was considerably milder than in the present instance. I was induced to try what would be the effects of mercurial frictions on the spine, in this case, partly from having found it produce good effects in the case already related, partly from the morbid appearances presented by the spinal marrow of Lieutenant M., and partly, because the other remedies which I tried were of no avail. This proved no better than the rest.

The next, most interesting case, occurred in a young man of about 19 years; he was attacked slightly in the morning of the 9th, but did not come to hospital till about 7 P. M. He was at that time getting cold, the pulse had become indistinct. He had no nausea or vomiting, but urgent thirst, frequent purging, and slight cramps in his legs; in this state, he got anodynes after every evacuation, and magnesia was mixed in his drink. 10th, purging has ceased, pulsations and heat natural; ol. terebinth ℥ss. tinct. opii. gtts. 30; the turpentine did not open his bowels, and in the evening he appeared uneasy from that cause, calomel ℈i.; the calomel did not operate after four hours, and the uneasiness had increased. A cathartic enema was therefore given, which quickly produced three copious dejections, and immediate relief. 11th, he appears much worse to-day, is completely exhausted; repeat calomel, apply sinapasms freely; the calomel purged him four times, twice during the day, and twice during the night. On the 12th, the pulse was again perceptible, but he was still cold, he was besides, restless, and delirious; mercurial frictions to the spine three times a day, cathartics. 13th, appears considerably better to-day; cathartic has operated several times, stools dark. Continue the remedies; he had so much recovered by the 15th, that he was able to walk about hospital, and took food with a good appetite.

He continued to improve all next day, and expected to have left the hospital, as a convalescent, on the 17th or 18th at farthest. But on the night of the 16th, he was attacked with bilious purging. On the 17th he was delirious, pulse frequent, small, and hard, tongue dry, bowels pained on pressure, extremities cold; a vein was immediately opened, and about 8 oz. of blood abstracted. While the blood was flowing, the pulse enlarged and the extremities became warmer. After the blood was stopped, a violent rigour came on; an anodyne and a large draught of warm water soon removed this; calomel grs x. and opium grs. I rep. in the evening; apply a blister to the neck. 18th, Calomel purged him 6 times, the stools were dark; delirium; pulse in the wrists 140, in the feet indistinct; they are now cold. Leeches to the temples, a blister to the head, sinapasms to the trunk and feet. 19th, leeches bled freely, blister rose well, bowels open; is comatose, and restless by turns, is sinking; he died in the evening.

Ibrahm Kawn, æt. 45, 13th January 3 P. M. was attacked this morning with purging, which has been repeated several times since; stools watery, pulse imperceptible, heat low, is deeply oppressed, has pain of stomach, urgent thirst, features collapsed, slight cramps of his legs, anodynes, mercurial frictions to the spine, sinapasms to the breast, evening, calomel ℈i. 14th, he was rubbed three times

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yesterday an hour each time, his skin had become warm last night; it continues so, and is soft and perspirable to-day, no purging, calomel ℈i. continue frictions; calomel operated 3 times. 15th, mouth sore, stools dark; is much better, continue frictions, calomel grs. x. mane et. vesp. 16th, has been costive since yesterday, complains now of pain in his bowels, is in other respects nearly well, haust. cathart. The cathartic operated well, and relieved the pain. 17th, was found this morning lying speechless and insensible, eyes fixed, breathing difficult, pulse strong but cordy. I proceeded to bleed him, but after opening 4 veins of his arms, could get no blood. I then opened the jugular vein, and with great difficulty procured about 6 oz., but without relief to the patient. A cathartic was given, and sinapisms applied.

18. The cathartic did not operate well, but he urined very copiously. Pulse 100, and strong in the wrists, imperceptible in the feet, appears nearly as yesterday; some salts have purged him freely this morning; feet cold; a turpentine enema immediately. Heat to the lower extremities, sinapisms to the trunk, a blister to the head. These and various other things were tried during this, and the two following days, but produced only momentary benefit. He died on the evening of the 20th January, three days after the relapse.

There is considerable coincidence in several points of these two cases, which seems to deserve farther notice.

On the 16th, both the patients were in a state of convalescence: On the 17th they were both dangerously ill; previous to the relapse, they were both under the same treatment, viz. camphorated mercurial frictions on the spine—on the morning of the 16th, we used the last of our mercurial ointment.

Do these circumstances warrant the conclusion that their recovery was owing to this mode of treatment? and their relapse to its sudden discontinuance? These appear to me to be questions of considerable practical importance, and which cannot, I imagine, be solved, until we have the results of more extended experience to assist us I will state one case which I think bears on this question. A young gentleman was attacked with typhus fever. The treatment consisted principally of spinal frictions with camphorated mercurial ointment. In this case, the disease was so obstinate, that it was 12 days before the slightest impression could be made on it.

As the mercury had been pushed to a very great extent, during that time, and as his mouth was only beginning to be affected, the practitioner discontinued on the first favourable change the frictions; being afraid of inducing a mercurial disease. Within 24 hours from that time, the patient relapsed, inflammation of the bowels took place, and he died in little more than 30 hours after.

These cases show how cautious we ought to be in leaving off mercurial frictions on the spine, after they have been continued for two or three days.

I have only tried the mercurial treatment in two cases, from the commencement. The other patient recovered speedily. In him there was an almost immediate improvement after the first rubbing. When he arrived at hospital, he was still warm, but his skin was dry and harsh. After the first rubbing, it became soft and perspirable. His mouth became sore on the second day; the disease stopped, and he returned to his duty on the 8th day.

The facts ascertained concerning this mode of treating Cholera, are too few to admit of any conclusion being drawn from them, as to the probable success, likely to attend a more extended use of it. If I have another opportunity of bringing it to the test of experience, I shall not fail to avail myself of it, and communicate the result, but I trust that it may be long before such an opportunity presents itself.

In the present epidemic, I used magnesia frequently, with great freedom, as an auxiliary. In those cases where thirst, and burning heat of the stomach, were prominent symptoms, it gave great and immediate relief. It was usually administered in the drink; a quantity of it was thus swallowed with every mouthful of the fluid.

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I have now brought this outline to a conclusion, it exhibits a general, but I trust a correct view, of all the more important circumstances; which occurred during the prevalence of the Epidemic Cholera at Samulcottah.

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Lieutenant A. M. æt. 28. 9th January, 1822; very stout and plethoric, was attacked last night about 12 o'clock, with watery purging, which continued the whole night: no vomiting; or pain in his bowels. He was at a party where he had made rather free: and similar attacks being not uncommon on such occasions, he did not think it necessary to send for assistance, until between 9 and 10 o'clock in the morning.

When I arrived, he was in bed, complaining of slight nausea and thirst; pulse feeble, heat of surface about the natural standard, tongue furred. He said that he wished to get his bowels well cleared out, as he had not felt well for some days, in consequence of living too freely; twenty grains of calomel, with two grains of opium, were immediately ordered, but he could not take it, on account of loathing and nausea. The attempt was followed by vomiting, of a whitish fluid, which he supposed, from the taste, to be tea, which he had just drank. An anodyne draught was then administered, it remained on his stomach, about ¼ of an hour, but did not make any alteration on the symptoms; coldness of the feet, and slight cramps began, soon after, to be complained of.

A vein was opened, and about 10 oz. of blood abstracted, when faintness, nausea, and violent retching to vomit, came on. The bleeding stopped, and could not be renewed. The cramps in his legs increased in violence, and frequency. The purging also became more frequent and the whole body was quickly covered with cold perspiration: the heat sunk rapidly, and the pulse almost ceased at the wrists. A second draught was administered, and was again rejected. Heat was now applied to the body, the sweat was assiduously rubbed off, and two large sinapisms were applied to his back, and epigastrium. These various changes took place in about 4 hours.

The sinapisms were applied upwards of half an hour before they produced any effect. About 3 p. m. the cold perspiration ceased to flow. His skin began to regain its heat, the spasms abated, and the pulse was again distinct before 5 o'clock, three hours after the application of the sinapisms.

At this time he expressed a desire to sleep, and said that he was prevented by the pain of the sinapisms. They were therefore at his own request, removed, and he made himself comfortable, but could not sleep. At 6 o'clock a draught composed of tinct. opii gtts. 100, ol. menth. gtts. vi., aq. ℥i. was administered, and remained on his stomach. He again laid himself to sleep, and I left him. I returned again about 7 o'clock, but before that time, every favourable symptom had disappeared. His skin, was covered with cold sweat; pulse gone, face livid, great oppression; considerable restlessness and urgent thirst. The sinapisms were ordered to be renewed. Before they could be got ready, he began to complain of pain in his side, which was almost immediately followed, by violent spasms of his diaphragm, which nearly suffocated him. When they began to abate, and he to get steady, a vein was opened, from which a few ounces of blood flowed; violent retching to vomit then came on; after continuing a few minutes it went off, and left him quite exhausted; difficult breathing soon followed, and he expired about 10 minutes past 8 P. M., without a struggle.

Sectio Cadaveris.

Whole body livid, extremities very rigid, countenance collapsed.

Head—Integuments bloodless, calvaria thin, sutures ossified, dura mater

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healthy. The meningeal vessels almost empty. In removing the dura mater, it was found to adhere firmly to the subjacent membranes at several points, and particularly, the falx, to the edges of the hemispheres. All the veins enveloped by the arachnoid membrane and pia mater, very turgid, some of them containing dark, others red blood. The membranes were thickened, and the whole superior surface of the brain, covered with small air bubbles, and some serous effusion. The brain was now removed entire from its cavity. The base was even more covered with turgid vessels than the hemispheres, and the membranes more thickened, but no air bubbles. These appearances were most marked on the medulla oblongata, and tuber annulare; the ventricles were opened from below, by lifting the cerebellum and dividing the membrane, which closes them posteriorly. They contained about an ounce and a half of reddish serum. The choroid plexus was so highly injected, that it was perfectly black. The substance of the brain was pretty firm, and free from organic disease. Posteriorly, its vessels were moderately injected with blood; anteriorly, they were empty, as the bloodless section showed; no effusion in the cerebellic cavity; perhaps this was from the spinal canal having been opened before the head.

Trunk—A thick layer of fat under the skin; muscles very soft.

Thorax—Lungs collapsed, no adhesions; anteriorly, of a livid colour, posteriorly, very dark, from accumulation of blood; sound in structure. Heart, empty, rather larger than usual; parietes very thin and soft, valves all perfect; almost no blood in the neighbouring large vessels.

Of a considerable number of dissections which I have witnessed, I have never seen one where there was so little blood, particularly, in the larger vessels, in proportion to the size of the individual.

The aorta was traced to its bifurcation; it was empty, coats very thin, internally of a reddish colour; calibre so small, that it would scarcely admit my ring finger, and at its bifurcation, my little one.

Abdomen—Omentum an immense mass of fat, covering the whole of the viscera, and adhering firmly to the sigmoid flexure of the colon. Small intestines exhibiting a purplish blush, their small vessels being finely injected. The large intestines healthy, mesentery loaded with fat; its large vessels almost empty, stomach apparently sound, much distended. It contained much air, and a quantity of whitish fluid. Between the mucous and muscular coats of the smaller curvature, a quantity of coagulable lymph was effused, indicating the commencement of organic disease. There was a large dark brown patch on the large curvature, produced by venous congestion; otherwise healthy. The small intestines were filled with a fluid, of nearly the colour and consistence of cream. The internal surface perfectly white, not the slightest appearance of vascularity. The large intestines contained a fluid of a similar appearance, but in smaller quantity; internal surface also white; liver nearly twice the usual size, indurated, composed of cartilaginous granulæ, and the proper hepatic substance, in nearly equal proportions; gall bladder half empty, bile thick and dark coloured; spleen approaching to the same state as the liver; pancreas sound; kidneys large and flabby, imbedded in immense masses of fat; bladder contracted and empty. The semilunar ganglion was surrounded with much dark gangrenous looking substance; and adjoining to it, there was an ulcerated appearance, but no pus.

The whole of the viscera from the neck downwards, were now removed, to expose the vertebræ, for the purpose of examining the spinal marrow. In doing this, the psoæ muscles were laid bare. They were soft, relaxed, and without the slightest appearance of former contraction; the spinal canal was easily opened by sawing through the bodies of the vertebræ at an angle of about 45 deg. with the heads of the ribs; while sawing the bones, some blood run from them. Their colour was nearly that of healthy spleen, from an unusual accumulation of blood.

The spinal marrow was removed entire from its bed. There was a quan-

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tity of water in its sheath, and that membrane was of a deep red colour. The cervical part, anteriorly of the medulla, was much more vascular than usual; the posterior surface was more vascular than the anterior; the dorsal part was affected in nearly the same degree with the cervical. In the cauda equina, every nerve had a large vessel upon it; the colour of most of these was a florid red; there were also some dark. The membranes at that part were thickened, and the arachnoid membrane, throughout, adhered to the dura mater. The medulla, in the lumbar and dorsal portions, surrounded with fat.

Remarks.

The first and most obvious conclusion to be drawn from this dissection is, that the epidemic attack must have proved fatal, when connected with such extensive organic disease, had it even been treated from the commencement. Besides, the energies of his naturally strong constitution were much impaired, by a continued course of hard living of several years duration, and by several attacks of fever, which were generally difficult to cure. These circumstances account sufficiently for the termination of this case.

They however prevent us from drawing satisfactory inferences concerning the state of the brain and spinal marrow in cholera, because many dissections of the bodies of inebriates have afforded similar results, and sometimes even to a greater extent, than in the present instance. Had this individual on the contrary, lived moderately, and these organs been found in a similarly congested state, there could have been no hesitation in concluding from ocular demonstration, that the whole centre of the nervous system bore the onus of the disease, and that if we could relieve it, we would cure the disease.

The peculiarly turgid state of the hemispheres of the brain, is not altogether referable either to the disease, or mode of life, but partly to the state of the heart.

Similar congestions, thickenings of the membranes, and adhesions, are found very generally to accompany disease of that organ; so invariably, indeed, that whenever there is deep seated pain in the upper part of the head, the state of the heart should be inquired after, and when disease of the heart is suspected, the state of the head often materially assists the diagnosis.

The general tendency to obesity may also in some degree, be referred to the state of the heart, at least, it is a very frequent concomitant of its diseases, and is perhaps produced, by the debilitated state of the circulating centre. It was, I believe, a view of this kind, that led Bichat to consider obesity and dropsy merely varieties of the same disease; both depending upon deficient vascular action. They principally differ in the state of the digestive organs. In obesity, digestion is usually performed with activity, while in dropsy, it is for the most part very imperfect.

The appearance of the cauda equina is such as I expected from the preceding cramp of his legs; they can be traced to that origin. Whenever a muscle is convulsed, the origin of the nerves supplying that muscle, are always found loaded with blood of a florid or vermilion colour; so much so indeed, that occasionally when the spasms have been violent, and of considerable duration, the nerves resemble red silk cords in place of being of a glistening white. In paralysis, the nerves are similarly loaded, but the blood is then of a dark brown colour. The mixture of red and dark, which occurred in this case, indicates a mixture of spasm, and paralysis.

It appeares then, that the nature of disease, is intimately connected with the colour of the blood. This is invariably the case, and demands the constant attention of the practitioner; for, whenever the system is copiously supplied with red blood, its diseases are always active or inflammatory, and require to be treated with the most active depletion; when on the other hand, there

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is a deficient supply of red blood, the diseases are invariably of a low, putrid, or congestive type, and require the utmost care in the use of depletions.

The success of our practice depends so much on our attending to the colour of the blood, that I hope I shall be excused for attempting to investigate the causes by which its changes are produced.

Mr. Orton has attempted to ascertain the cause of the dark colour of the blood, which is so generally found in cholera. At an early stage of his investigation he states, that it is extremely probable, that the diminished energy of the nervous system, which he has also shown to be generally present in this disease, is produced by the imperfect change of the blood in the lungs. He shortly afterwards appears to doubt the accuracy of that opinion, and asks, whether the deficient change of the blood, is the effect, or the cause of the diminished energy of the nervous system? In my opinion, it is the effect.

The nervous power is formed in the brain, and is thence distributed to the rest of the body. By removing the brain, we cut off all farther supplies, but we do not abstract that which has been already distributed; while it remains, the application of stimuli in proper degree, will maintain all the functions of life, but no longer. This explains the difficulties suggested by Mr. Brodie's experiments, and also the cause of venous blood becoming red when first exposed to the action of the air.

If venous blood be received on the wires from a galvanic battery, it never becomes red,* in consequence of the galvanic influence instantly displacing the nervous. The changes which the blood undergoes in its passage through the lungs, are not produced by the action of oxygen on it, but by the action of oxygen on the nervous influence, which is combined with it. Hence it is, that these changes cease when this influence is withdrawn, however freely the air is inspired. If this influence is supplied in due quantity, the changes take place even when a very small supply of air is admitted, as we sometimes see in those diseases of the lungs, where they become almost impervious to the air.

Examples of the first of these positions are of frequent occurrence; whatever rapidly diminishes the energy of the brain produces this state; for example, a blow on the head, a shock of electricity, the depressing passions, fear, grief, &c. The energies of the brain, are also impaired by the continued application of stimuli, so as to keep up excessive action, and by the exhausting effects of protracted fevers. In these instances the blood is dark, does not coagulate firmly, and is unsusceptible of the action of oxygen.

Every malignant epidemic which has yet desolated the earth, has been attended with a state of the atmosphere, unfavourable to the generation of this power; hence arises the dangerous character of all diseases occuring at those times. What that state consists of, I cannot form even a conjecture; and as far as I can judge, all attempts to elucidate its nature have hitherto failed.

The epidemic which now prevails in this country, is perhaps one of the most remarkable yet upon record. It has at different times, and in different places at the same time, assumed the utmost variety of shapes; varying in the rapidity of its course, in the number, succession, and severity of its symptoms, and in the circumstances of its visitation. In it, we frequently see a general change of the blood from red to black, in other cases we find an admixture of red and black, and in others again, judging from the symptoms, the blood continues nearly in the healthy state. These differences can generally be ascertained during life. The present case affords an illustration of the second form. In two veins almost touching, and both discharging their contents into the same trunk, the one was red, the other dark. In this case there was spasm of the gastrocnemii muscles,

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* Vide Dr. W. Philips's Experimental Inquiry, 2d Ed. p. 243.

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and there was red blood on the origins of their nerves. There was a larger proportion of red blood on the cauda equina, than in any other part of the body.

It is curious to observe the whole blood becoming of a dark colour; but much more so, to see it red, in a particular vessel, or set of vessels, and dark in all the rest; and vice versa dark in one part, and of a healthy red in all the rest.

Dissections of the spinal marrow particularly when the patient has died of protracted typhus, or any putrid disease, often show red blood in the cervical part of that organ, when in every other part, it is perfectly black; again, we often see dark blood in a single blotch on the skin, in an otherwise healthy individual. The causes of these partial distributions, are the same, as of the more general, or partial supply or deficiency of nervous influence.

Deficiency may be produced by the application of stimuli to a part for a length of time; a frequent cause of it is an attack of inflammation. The chronic stage is a familiar example of local deficiency of red blood, and also of nervous energy. The blood, when it enters the part, immediately loses its red colour, but seems to regain it, when it enters the sound substance. The proof of its regaining its colour is, that the surrounding parts retain their healthy appearance. These things show, that the presence of oxygen is not always necessary to the blood becoming red.

What has been mentioned in regard to the state of the blood on the spinal marrow, during spasms and paralysis, completely refutes the doctrines of " Atony being the parent of spasm," and " that deprivation of nervous influence produces spasm." They show, that whenever there is spasm, there is invariably a supply of nervous influence to the contracting muscles, although every other part be imperfectly supplied; we have seen that the presence of red blood is requisite for the production of spasms, and that without nervous influence there is no red blood.

Paralysis is a common consequence of spasm; this arises from the nervous influence being exhausted by the previous violent muscular action; the blood then becomes dark, and is no longer capable of exciting muscular contraction.

These conclusions are not deduced from a priori reasoning, but from facts, first ascertained, and brought to light by the scalpel: They were first drawn by that most able, and indefatigable pathologist, Dr. Sanders of Edinburgh, with the morbid parts before him; they are of great practical importance, as they direct us to the very point on which to apply our remedies in these diseases; they show us whence local depletions can be most advantageously made, in those states of the system, where extensive general ones would be certainly fatal. They shew us also, how we can most effectually assist the operation of general, with local remedies, by indicating the " locality" of the disease; and lastly, they show the states of the system, in which large general depletions can be used with safety and advantage, and where they are inadmissible.

I judged the present a favourable opportunity for laying these views before you, in consequence of having the things before me to direct me in my course. They appeared to me to be of sufficient importance to warrant the attempt, and, if I have made any error in reasoning, I hope it will meet with every indulgence, when the difficulty of the enquiry is considered.

Asst. Surg. W. Turnbull, Palamcottah, 1st July 1822.

As the Epidemic Cholera created much alarm, and even proved to a considerable degree destructive, amongst the multitude assembled at the Pearl Fishery, I conceive it my duty in this place, to give some account of it. The Fishery commenced on the 10th of April, and on the 13th I was summoned by the Collector to Maupelloor, in consequence of the disease having made its appearance. It was computed that upwards of a lac of people were congregated, and from this, I have to record 443 seizures from Cholera, out of which 187 died: and

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to account for a heavier than usual proportion of deaths (being about 3 in every 7 seizures, or 42¼ per cent.), I must beg leave to enter somewhat into detail.

The place selected for the erection of a temporary village, was an open beach about three miles north of Tutocoreen, chosen from its vicinity to the banks. I shall here mention a few circumstances that may be looked upon as exciting causes of this complaint.

1st. As the materials for building huts were brought from a distance, they were of course scarce and expensive; and many were consequently much exposed to every vicissitude of the climate; to a burning sun, the heat much increased by reflection from the sand, by day: (the thermometer usually varying from 96 to 102 in my tent in a tope and at a considerable distance from the beach); and at night, to heavy dews and chilly land winds.

2d. Water, procured from holes, dug in the sand; it was dirty and brackish; good water only procurable at a distance of several miles, and beyond the reach of the greater part of the multitude.

3d. Spirituous liquors of a bad quality in profusion, easily obtained, and no doubt freely indulged in.

4th. Great accumulation of filth of all kinds. Oysters, fish, &c. from the great heat, speedily running into a state of putridity, and diffusing the most noxious effluvia.

5th. Countless numbers suffering, from poverty the most abject, the miseries of partial famine.

Many more exciting causes might be enumerated. The divers suffered severely, as, from the nature of their duty, might be expected; 104 were attacked, of which one half died. These men were in a measure, public servants, and it might be conjectured would have had considerable attention shewn them, and that consequently remedial measures would have been speedily adopted, and a more favorable result might have been anticipated. In reply to this, I state, that the boats started for the bank during the night, or very early in the morning, and did not return till four or five in the afternoon. When a man was attacked either on the bank, or when sailing to it, a very long period elapsed before medical aid could be had recourse to. Many were accordingly brought dead to the shore, and in others the disease had made such progress, that the subsequent medical treatment lost its chief advantage, viz. an early exhibition of remedies. I in consequence sent a black doctor, with medicines, along with the fleet; the Collector having directed that whenever a man was attacked, the boat, on board which he was, should repair instantly to the hospital boat; and I am convinced that a considerable number was thus saved.

The divers were also more predisposed to an attack than any other class, from the peculiar duty they had to perform; deprived of their natural rest from the early hour at which they were obliged to leave the shore, they had in addition a day of hard labour before them, and independent of the exhaustion caused by frequently diving to a considerable depth, the constant evaporation from their wetted bodies, exposed to a strong wind, could not be otherwise than pernicious. To a day of fatigue, often succeeded a night of riot and debauchery; the haunts of dissipation were invitingly open, and generally proved but too seductive. The seeds of disease were sown quickly; with some, to spring into activity; I shall relate an instance. One of the boats was prevented from sailing one morning, the complement of divers being incomplete; on searching, two men were found dead, locked in each others arms, the state of their bodies, and of the hut in which they lay, indicating beyond a doubt, the nature of their complaint; it was Cholera. These men had been seen the preceding night in a state of ebriety.

A guard of sepoys, of 100 men, by no means suffered in the same proporportion as the divers. There were about 20 attacked, and only 3 deaths; and when

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the application for assistance was made in due time, the most beneficiel result generally followed. The detachment was encamped within 100 yards of my tent, and when apprized of a seizure I lost no time in repairing to the patient; of the deaths; in the first case, no report was made till after the patient was in extremity; having been eight hours ill; in the 2d, I was unfortunately absent at Tutocoreen, and though sent for, death had taken place before I returned; the third had all due advantage, but the disease proved too powerful. Three successive deaths however, alarmed the men a good deal, and no time was afterwards lost in sending to me, and I fortunately was most successful in every succeeding case. As the detachment consisted of stout young men, from the flank companies of the 20th, I found the happiest effects from bleeding copiously in the first instance, removing the spasm, and quieting the irritability of the stomach; thus enabling me to exhibit remedies internally, with out any fear of rejection.

Only the lowest of the common people suffered from this disease; those with scanty means of subsistence, and without friends or connexions to assist them, if taken ill. The most disgusting apathy was often witnessed; miserable wretches have been found dying, or dead in the midst of hundreds; and though it was well known that an hospital was open for their reception, where native doctors were ready to give every assistance, still the trouble of conveying them there was annoying to them, and overpowered any compassionate feelings they might for a moment have entertained. Occasionally, some were brought; but in general, too late; to give the powers of medicine a fair chance.

My instructions to the native doctors were necessarily simple; calomel, laudanum, peppermint, æther, arrack, &c. were duly prepared, so that no mistake should occur in the exhibition; and I had every reason to be satisfied with the zeal and diligence of my assistants. I also prepared pills of camphor, opium, and black pepper, which I distributed among the most respectable people, with instructions to administer one or more according to circumstances, if there was no native doctor in the way; and I had occasion often to hear favourable report of these pills.

Asst. Surg. D. Donaldson Calicut, 1822.

The epidemic cholera, and chicken pox are the only two diseases that have prevailed to any extent at this station during the last six months, deserving any particular notice—the former has in several instances manifested the greatest violence in its attacks, and a wonderful rapidity in depriving the wretched victims of existence. In others, where the constitution was not enfeebled by age, previous indisposition, or otherwise, the symptoms were milder, and the disease terminated favourably.

From the beginning of the year, until the last week in March, the Jail appears to have been almost free from the epidemic, though it continued lurking about the place; at one time seizing the opulent, well fed, and well clothed natives; and at another, the miserable half starved wretch, suffered under its baneful influence; indeed, so uncertain has it been in its visits, and continuance, at any particular place, and so capricious in its attacks, that no person would even hazard a conjecture when, we may be entirely free from it, or, who is exempt from its influence, for it is to be seen at all seasons, cases being as numerous in the dry, as in the wet weather.

The symptoms varied according to the age and constitution of the patients; some had the usual watery discharges from the stomach and bowels, attended with spasms, collapsed countenance, and deadly coldness of the whole body; whilst others were seized with vertigo, and sudden prostration of strength, succeeded by frequent, copious congee-like, or muddy evacuations from the bowels, sometimes with, and other times without, vomiting or spasms. In one case, the watery fluid was ejected from the intestinal tube with an impetus, like water forcibly propelled through the pipe of a large clyster syringe, and the quantity thus discharged was enormous.

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As predisposing, and exciting causes of this disorder, amongst the prisoners in the jail, I shall first mention diet, which, as may be supposed, is poor in quality, though abundant; and as these men have only one meal in twenty four hours, many of them actually gorge themselves in a most extraordinary manner, and from the quantities of rice, and vegetable matter I have seen ejected from the stomach, it must have been distended to a very unnatural size.

At certain seasons of the year on this coast, when the atmospherical variations are considerable, the almost total want of clothing may be also considered a predisposing cause—those men, three hours after their only meal is issued out to them, are locked up in different apartments, where they remain crowded together until day light next morning; and when the nights are hot, and sultry, and the morning cold and raw, at the time they commence their labours, with empty stomachs, and no covering, it is natural to conclude, that diseases would sooner attack them, than other classes of natives equally destitute of comforts, but who are not subjected to the same exposure, or transition from a heated crowded cell, to a cold atmosphere. Those persons only, who have been tried and received sentence, are obliged to work; the others remain in prison in a state of inactivity, probably brooding over their crimes, and dreading their impending, and uncertain fate: amongst the whole number, there are many, far advanced in life, who are frequently forced away from their homes, situated in distant parts of the province, for committing offences of various descriptions, or contracting debts which they are either unable, or unwilling to pay; and as it is well known that in every part of India, where natives either of their own free, will, or by compulsion, come to the sea coast, from the hilly and mountainous tracts in the interior, they almost invariably become sickly; and as a proof of this fact, I shall merely mention a late case, which was tried before the Circuit Judge, when three of five persons who were apprehended for murder, and under trial, died within a few days before sentence was pronounced;—here then is a striking example of the great influence the depressing passions sometimes have on the human constitution, even when no marked bodily disease is apparent, for one of the above mentioned prisoners actually expired in the court compound, when under examination. If, therefore, fear and apprehension prove so speedily destructive to life, we may conceive that its effects, (however modified) on the minds of men labouring under disease, will at least in most cases, prove highly detrimental and retard recovery.

In every case of cholera when the patient applied in time, and the arterial action was sufficiently strong to admit of venesection, I took from twelve, to sixteen ounces of blood from the arm; and it was invariably followed by mitigation of all the symptoms; the spasms disappeared; and the subsequent alvine evacuations were generally bilious, and with the assistance of tincture of opium, spirit of sulphuric æther, spirit of ammonia, calomel, cordials, and tonics, frictions, and dry fomentations, the patients always recovered.

In those cases where collapse had taken place, bleeding was of course inadmissible, but in addition to the stimulating draughts and calomel, the acid blister was employed, together with mustard cataplasms, and the patient's body surrounded with bags of hot sand, or salt; and I have often witnessed the most decided benefit to result from the constant, and unremitting application of heat communicated to the patient in this manner, and which is, in my opinion, far preferable to the warm bath.

Observations on the Epidemic Cholera, by Asst. Surg. R. H. England, 1821.

This disease which appears to have originated at Jessore, without any other assignable cause than the use of fish, and rice, which was considered unwholesome, is said to have extended to the adjacent villages, to the whole of the province of Bengal, to Behar, and to the principal cities on the east and west sides of the Ganges, in a progressive manner. After it had reached the Upper Provinces, its visitations were observed to be more irregular, and to have taken place in the large towns about the same period. We are told that it has been

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observed to take a circuit round a village, leaving the inhabitants thereof untouched, and pass off as it were about to depart wholly from the district; yet after a lapse of weeks, and even months, it would suddenly return, and scarcely appearing in the parts which had already suffered from its ravages, would nearly depopulate the spot that had previously escaped its baneful influence. It is also observed, that after it had taken a considerable course on one side of the Ganges, it would ultimately visit the opposite bank. It has likewise been observed to appear, and continue in a sporadic form, in many parts, especially in those which are subject to visitations of fevers. Its analogy with the plague is very conspicuous: Hernandez observes, " we have seen this disease cease to commit its ravages by the mere interposition of a river, or wall." Prosper Alpin, Russel, and Sonnini, have remarked, that patients afflicted with the plague, on being brought from an infected spot, and carried into a place where the predisposing causes do not exist, do not communicate the disease to other persons, even when subjected to the most intimate exposures. Several authors have observed the plague in a sporadic form. A peculiar odour, emanating from persons afflicted with the plague, has been frequently noticed, and it appears to be similar to that which proceeds from patients labouring under the Epidemic Cholera. Many instances are quoted, where persons afflicted with the plague have not had buboes, or exanthematous eruptions. Vomiting, diarrhœa, excessive sweats, convulsions, intermitting pulse, prostration of strength, delirium, and a cadaverous odour of a peculiar nature proceeding from the body of the patients, are considered the most dangerous, and formidable phenomena in the plague, and they are very similar in the Cholera. At Marseilles, the plague was often found to produce sudden deaths, without any other precursory symptoms: at other times death ensued, within six, eight, and at the farthest, twenty four hours after the attack. The sweat, which committed its ravages so much in England in the fourteenth, and in the fifteenth centuries, is considered by Pinel as the worst form of the plague, and he adds, may not the very rapid course of this disease have prevented the appearance of the buboes, and exanthematous eruptions which form the distinctive signs of the plague. Hernandez who has given us the opinion of many authors regarding the plague, endeavours to prove, that the disease is produced spontaneously, and that it may be preserved sporadically; but concludes that the existence of predisposing causes is necessary for its propagation; and he clearly demonstrates, as well as Desgenettes, Larey, and many others, its contagious qualities. Hernandez observes, that a large quantity of fish was thrown upon the coasts of Sicily during the reign of Robert, and that the plague shortly afterwards made its appearance there; and he adds, that Prosper Alpin, Desgenettes, Pugnet, Savaresi, Pougneville, &c. have clearly observed, that this disease appeared spontaneously in Egypt, from local causes: he also says, when Dantzick, Breda, and Paris were besieged, and the inhabitants thereof reduced to great extremities, the plague appeared, and committed great ravages amongst them: no communication with those without could take place, and the beseigers enjoyed good health—Young infants are more exempt from the plague than others, and as far as my observations extend, the same phenomenon occurs in the Cholera—I have seen several young infants, who were confined to the nourishment at the breast, and exposed in common to all exterior agencies with their mothers, laying in perfect health, close to the latter, who were expiring in the agonies of severe attacks of the Cholera. Can this be attributed to a difference of the nervous impression, to the diet, or to the powers of absorption? Priestly has observed that young animals live longer in noxious airs than old ones. In consequence of the frequent, and almost simultaneous appearance of the Cholera in an epidemic form, attacking in various places subjects of different ages, and temperaments, and its equally frequent, and almost sudden disappearance from such places, it is naturally inferred that it must be influenced by some atmospherical phenomenon; and many persons have concluded that it cannot be consequently of a contagious nature; but these opinions are supported by too slender, and doubtful grounds to carry conviction. In two old buildings situated in the town of Tutocoreen, which I converted into hospitals for the use of the first battalion of the fifteenth regiment of Native

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Infantry; which contained in the average about two hundred and fifty of the sick men of this battalion, for the period of twelve days; only five mild cases of the Cholera occurred amongst them. Amongst an equal number of the healthy troops of the same battalion, encamped about a quarter of a mile from the town, twenty-eight cases of this disease, of a formidable description, occurred during the above-mentioned period, and most of these cases were treated in the same hospital, though not in the same wards, which the other sick men occupied. The four cases first alluded to, happened in the hospital which received the other epidemical patients, and subsequent to the admission of the greatest number of the latter; and I ought also to observe, that although their wards were distinct from the former, yet there was a free communication between them; I should add too, that, I lost a second dresser, and a servant, of the Cholera, at this period, who were much employed in their attendance on the sick. I experienced two attacks of this disease of a mild nature, and two more of the medical servants were afflicted with it, who also belonged to the above-mentioned battalion. I find that the disease has been greatly felt amongst the attendants on the epidemic patients at various places; consequently these occurrences, together with the progressive extension of the disease over an immense extent of country, tend to establish its contagious principle. Troops, and travellers of various descriptions have fallen sacrifices to this direful disease on a march, in places where no vestige of its existence could be traced amongst the inhabitancy thereof, although they, too, were equally exposed to fatigue, and privations as the former; from which circumstance we must infer that atmospherical causes are not at all times, if ever sufficient, to propagate the disease without some additional agency. Shortly after such visitations by troops, and different travellers, the disease has been observed to appear, in the places that these people had quitted, amongst the inhabitants thereof, which occurrence adds further confirmation in support of its contagious properties. The Cholera has existed both during wet, and dry weather; and it has been remarked, that a change from either of these states to the other has been usually attended with a mitigation, and sometimes with a temporary cessation of the epidemic visitations. It has been observed to attack new-comers more readily than those who have been sometime resident in a place. Nothing can be more illustrative of the difference between the effects of climate on those who are habituated to it, and on those who are not, than was demonstrated on Ceylon, during the late campaign. In several parts of the Kandyan territory, the European soldiery, and the sepoys who had not been long in these places, suffered severely from intermittent, and remittent fevers, dysentery, and gangrenous sores: the latter became very extensive, and formidable amongst the sepoys, and usually succeeded even to the most trivial breach of the skin; of which, leech-bites were the principal causes, and they were observed to appear mostly amongst those, who were the worst supplied with a wholesome, and due proportion of food: at this period, the native inhabitancy continued in the usual possession of health, and although they were exposed to as many, and often greater privations than the former, yet disease very rarely attacked them. Amongst the large number of coolies who were sent from the Coast of Coromandel to Ceylon, for the purpose of carrying provisions for the troops, scarcely any of them escaped disease, but amongst the native coolies, a case of sickness was a rare occurrence. Peculiar states of the atmosphere are observed to be injurious to rheumatic, and asthmatic subjects, and to many others, who are predisposed to certain diseases; but unfortunately for the science of medicine, we are not sufficiently acquainted with the exact nature of the action of such predisposing causes on the animal economy; nor is it probable that we ever shall be, as during any particular season, or day of such season, where the body of man receives the combined impressions of the various states of the atmosphere, of its increased, or diminished weight, its degrees of humidity, and dryness, or even perhaps of the directions of the wind, or of atmospherical electricity—it is scarcely to be expected, a celebrated author observes, that amongst this concourse of variations, the particular species, producing a specific, or determined effect upon the animal economy should be detected. It has been observed, that the disease has not appeared in serene, and settled wea-

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ther, to such an extent as to be termed epidemical. I had occasion to observe its dreadful visitations in the first battalion of the fifteenth regiment of native infantry during its stay at Tutacoreen in February of one thousand eight hundred and nineteen, and on its subsequent march, shortly after this period of the year, to Quilon; during which time the weather was not considered unseasonable. In those places which we visited in the vicinity of the Coast of Coromandel, and in the district of Tinnevelly the weather appeared clear, and rather warm: on the Malabar Coast the rainy season commenced rather early, and it was accompanied with a mitigation of the disease:—On the disease appearing at Jessore it was observed, that there had been no remarkable peculiarity of weather at that place;---that the preceding cold, and hot weathers were in no way different from those of former years; that the rainy season was proceeding with its wonted regularity. Those persons who believed that the disease was occasioned by an absence of bile, must have been undeceived, by observing that the matters ejected by the stomach, and intestines, are sometimes tinged with bile, and that constipation usually occurs when the passage of this secretion is obstructed by gall, stones in the ductus communis choledochus, or by a spasmodic affection thereof. The examination of the dead body also convinces us of the occasional existence of bile in the stomach, and intestines. Although I am induced to believe that the liver, unless it be under a state of apparent excitability,---does not afford so abundant a secretion under this disease, as in health, in common with the glandular system in general, as might be inferred from the langour of the circulation,---yet it is well known that it affords a partial secretion;---and it is probable that it may be occasionally vitiated,---and devoid of its characteristic colours; for bile has been discovered of an almost colourless nature by authors. On inspecting the body of a person shortly after he had died from a severe attack of spasmodic cholera, I found the gall-bladder containing nine ounces of a grumous fluid, of a light, brown colour, inclining to greyness. The addition of pulverized lime to this secretion converted it into a bright yellow colour. The stomach, and intestines contained a matter similar in colour to that which was found in the gall-bladder,---but, it was more faintly acted on by lime. In another subject from whom I collected some of the white, or whey-coloured matter, which he passed off by stool, I found on very minute inspection, that there was an immense number of small yellow globules swimming in this fluid;—this patient had all the symptoms of well-marked cholera, of which he died about twenty hours after the attack. The acrid bile in the Cholera Morbus which is taken up by the absorbents, is carried into the blood according to the observations of Doctor Assalini, and, if this be the case in the epidemic cholera, we may readily account for its being thrown off by the exhalents. The bile taken from patients who have died of the plague has been injected by Dedier into the blood-vessels, and given the disease. Doctor Puguet has observed that the glairy matter ejected by vomiting in the plague will transmit contagion, and Mallet has observed the same effects from the urine, and fœces. The experiments of Magendi, Girtanner, and Legallois prove the possibility of transmitting the action of poison by the channel of the blood vessels. As the effects of poisons seem very analogous to those of the epidemic cholera, it is probable that both prove fatal in proportion to their effects on the brain, and nervous system: the same is applicable to the effects of malignant fevers, and asphyxia. Doctor Portal observes, that on pouring a solution of opium on the heart of a frog, of which he had opened the chest, that its motions ceased much quicker, than those of the heart of another frog, whose chest was opened, but which had not any of the same solution poured on its heart. He also observes that on pouring this solution on the heart of a frog, which had its head first removed, its motions remained much longer, than those of another frog, which had the like solution poured on it, without having its head separated from the body: this occurrence led him to conclude that opium, and other narcotic poisons, first destroy the sensibility of the brain, and the nerves, and subsequently the irritability of the heart. From these experiments Doctor Portal conceived that mephitic airs produced the same effects, being aware too, that they offered the same symptoms, and that the examination of the bodies gave the like results. Two or three years afterwards his opinion was

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confirmed, by pouring some carbonic acid gas upon the hearts of some live frogs, which had their heads attached to their bodies, and on others with their heads detached therefrom—the results of these experiments were precisely the same as the former ones. He conceives that the mephitic airs of hospitals, prisons, and marshes, which occasion malignant, and putrid fevers, act in a somewhat similar manner, though less powerfully, on the animal economy—he adds that chemists have recognized many deleterious gases, amongst which they have principally named the hydrogen of marshes, sulphureted hydrogen, carbonic acid, azotic gases, &c.—these gases he says, pass into the blood by the channel of respiration, and by the absorbent vessels of the skin : they destroy the red colour of the arterial blood (perhaps its vitality) in which was comprehended the faculty it possessed, through the nervous influence, of preserving the natural irritability of the heart, and of exciting its contractions. In the severest attacks of the cholera, I have noticed that several of my patients complained of an excessive painful sensation running up the spine, which they described as proceeding from the abdomen : this occurrence might be referred to the eighth pair, and great sympathetic nerves, whose particular distributions, as well as reciprocal connections afford, an author observes, equal reasons for the extreme sensibility which the stomach possesses ; a sensibility which is principally manifested, when the stomach is put into action, even by the sight of food, or medicine, which is offensive, and the idea of which sometimes alone suffices to invert the action of this organ ; hence, and from the fluids being thrown at first more internally, in consequence of the undue action of the capillary vessels in general, may be attributed the morbid irritability of the intestinal canal, in the epidemic cholera. The nervous influence is demonstratively great in every part of the animal economy ; an increased secretion of tears is produced by an affection of the mind ; an increased secretion of saliva, by the expectation of something grateful to the palate ; apprehensions of danger often produce syncope, despondency, and sometimes fatal diarrhæas ; or even sudden death. By this phenomenon of nervous impressions, we are prevented from committing irregularities, which would not only be destructive to life occasionally, but which would be a constant source of injury to our healths ; consequently as our existence, as well as that of the brute is preserved, by this faculty, it is reasonable to presume, that as the nervous system is so generally affected even by the approach of danger, that it would be the first, which would be materially affected by it, when the body might be directly exposed to its more dangerous operations ; and as the nervous power varies much in different subjects, as is clearly demonstrated in the ordinary occurrences of life, it is not surprising that some individuals contract epidemical, and other diseases, whilst other persons escape therefrom, though exposed to the same causes. Although the variolous, and some other diseases, do not produce any changes in the animal economy, that can be detected, yet the body generally resists a second attack of these complaints ; which phenomenon can only be attributed to the agency of an invisible property, which most probably is derived from the nerves. In consequence of the very little pain which has occasionly attended the epidemic cholera, as well as from the stomach, and intestines not uniformly exhibiting marks, which are commonly considered, as indicative of inflammation, the morbid state of the intestinal canal, has not been considered by many persons of an inflammatory nature. A late author gives the term of inflammation to every local exaltation of the organic movements, that is so considerable as to interrupt the harmony of their functions, or disorganize the tissue in which it is fixed. He adds that redness, and heat, are not essential characteristics of inflammation, for as the increase of the organic action has its seat in the capillary vessels of the diseased part ; and as the capillaries give passage to different fluids, and as their degree of susceptibility varies, the colour of the tumified plexus, which depends on the fluid, and the pain, which is merely the alteration of the sensibility, must both be variable ; therefore as the fluid upon which the irritated capillaries act is not always the same, and as the degree of irritation varies, the chemical changes which are subordinate to these two conditions, must naturally present themselves differently. If we may be allowed to

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indulge in this theory, even under some modifications, we may account better for the almost total absence of pain, and redness, of the affected parts, in some cases of the cholera, and of the contrary state in others,—whilst both conditions are considered of an inflammatory nature. Experience daily convinces us of the great difference, between the pains which attend phlegmon, erysipelas, and inflammatian of the mucous membranes. As the most accurate calculations have not proved the existence of heat, we may still presume that it is only a property of matter; and, as it is well known, that the section of nerves in a limb lessens its vascular action, and heat, we might infer that animal heat, depends on the modification of the nervous power. An author says, it might be considered improbable, that if the contents thrown off by the stomach, and intestines, be of a mild, mucous, and glutinous nature, they could produce any of those affections, which take place in the intestinal canal,—and upon the nerves, as well as upon the vital functions in general:—however we shall cease to be surprized on examining the animal economy more minutely:—we shall observe that if a humour, though mild, be in contact with a part possessing much sensibility, to which it is foreign, it becomes a powerful stimulant, as many experiments have proved. Even when the secretions are natural in quality, their detention produces considerable irritation, as is demonstrated by the effects of the mucous secretions of the nares, and bronchia, &c.—Under every circumstance it is therefore reasonable to suppose, that the inordinate action of the stomach, and intestines, in the Cholera, should produce a morbid irritation of these parts.—In this disease I am inclined to believe, that the secretions are often of an acrid nature, in consequence of the state in which I have noticed them, and, although they might not possess the property of stimulating the intestinal mucous coat of a healthy subject; yet they might still be sufficiently powerful to preserve, or increase the irritation of the morbid one, on which it is determined. I regret that I have not made any experiments on this subject, that are interesting. As we frequently observe very extensive blights in the vegetable kingdom, during the prevalence of certain winds, and seasons, and as subjects who are predisposed to certain diseases, are generally free from their baneful actions, until some hidden predisposing causes in the atmosphere excite them, we might in reasoning from analogy, (which is all we can do under existing circumstances,) presume that the Cholera is influenced by a like phenomenon, and although the component parts of the air might not be altered, yet it might still act as a predisposing cause, from its unequal directions on the capillary vessels of the lungs, and skin,—arising from its different degrees of moisture, or direction, or any other sudden vicissitudes, that have a tendency to check, or modify any of the most important functions of the animal economy. The primary cause of this disease is attributed by a late author, to a deficiency of electricity in the air which is breathed. The well known circumstances of the Cholera having appeared surprisingly unequal in certain districts, towns, encampments, and even houses,—and, of persons who occupied close, and comfortable dwellings, where there was most probably even a greater deficiency of atmospherical electricity than in the more unconfined air, appear unfavourable to the theory in question. It can scarcely be presumed, that so general a condition of the atmosphere should ever, or at least, so often have such local influence, unless there existed some peculiarity in the healthy adjoining places, or in the inhabitants thereof, which arrested its action, exclusive of that of a contagious principle:—this however does not appear to be the case, for although the inhabitants of these situations escaped the ravages of this disease at first, yet they afterwards suffered therefrom, and at a period when its influence was comparatively slight in those parts which had been previously the scene of its desolating powers. Priestly says he has found that the electric spark diminishes common air, and renders it lighter, and noxious. It is admitted that all bodies contain electric fluid, and that oxygen is in a negative state of electricity in its relation to other bodies, yet from Priestly's experiments we find that mice have lived in deplogisticated air (oxygen gas) a greater time, even five times longer than in an equal quantity of common air. As the existence of electricity is doubtful, in consequence of its imponderable nature, and as it may

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therefore be only considered as a property of matter, might not the suggestions of Priestly regarding the production of something analogous to an electric fluid in the animal economy, be very plausible. He endeavours to prove that the air proceeding from the lungs in expiration, is in a more positive state of electricity, than the air which they inhale from the atmosphere. As food is to the stomach, so is air to the lungs, and as we often observe the former act imperfectly by a very slight change in the quantity, or quality of the food, which it receives, in bilious, and other affections, and even in apparent health with certain persons, when there does not appear to be any sufficient reason for it, is it not probable that the lungs may act imperfectly on the air under certain circumstances. I should imagine that a super-abundance of electric fluid in the atmosphere, or in the animal economy, would be as likely to promote the Epidemic Cholera as a deficiency thereof, for although we find that slight electric shocks given to a paralytic limb, might tend to restore its use, by affording a stimulus somewhat approaching to that which the nerves had furnished it with in its healthy state; yet we know when artificial electricity is applied in a powerful manner to a limb, its effects are very formidable, and not much unlike those convulsive actions observed in the Epidemic Cholera. The fatal effects of the electric fluid during certain states of the weather is too often demonstrated. If this disease could be caused solely by an absolute noxious property, of the air, arising from a deficiency of electricity, its deleterious effects would naturally be equally as much felt amongst the brute creation, as amongst the human species; for as we observe that a super-abundance of this fluid is as much injurious, and even more so, to the brute tribe in general, than to man, we can draw no other inference. Many persons have presumed that the epidemic was felt amongst the brute creation, but there do not appear to be any well established facts thereof; indeed, if such had been the case the mortality amongst the domesticated classes of these animals would have been universally noticed. The opinion of Galvani, that animal electricity, is not absolutely analogous to the electricity discovered in all natural bodies, but is an electricity modified, and combined, with the principles of life, by which it acquires characters, which are peculiar to itself, is favourable to our observations on the cholera, for as we observe from the remarkable dark colour of the blood in this disease, that the lungs do not act on the oxygen gas of the air in a manner suitable to the preservation of health, we may infer that the animal electricity is affected thereby, and that it consequently ceases to preserve the due energy of the brain, and the nerves, and the vital functions in general. The analogy which exists between the principal phenomena of the most formidable epidemical diseases affords grounds to believe, that they are produced from causes nearly similar, though not precisely so. The plague, the yellow fever, and the cholera possess many remarkable analogies, although they are observed to exhibit some very distinguishing marks,---but our observations on certain local diseases would naturally lead us to expect them.---The liver is prone to run into a state of suppuration in some countries, especially in some parts of Eygpt, and often without any well marked precursory symptoms. Hepatitis generally terminates in a schirrous enlargement of the liver, with dropsy, in cold countries, whenever the disease proves fatal; but these occurrences are very rare in this complaint, in hot countries. As this single gland, and other important organs of the body offer such contrasts under a state of disease, or of inflammation, it is perhaps plausible to presume, that although some of the most formidable epidemical diseases do exhibit some distinguishing characteristics, yet they are sufficiently analogous to be comprehended under a modification of the same class: this opinion is somewhat confirmed by observing that the plague, yellow fever, and cholera in their epidemical forms, are peculiar to certain countries, and that those parts which are subject to the latter, are very rarely, if ever visited by the plague. As spasm is not an essential characteristic of the Epidemic Cholera, and, as it generally attends this disease in common with many others, in its clonic shape, I do not deem it necessary to enter into any particular enquiries respecting the analogy which this symptom bears in its relation to different diseases; indeed, as we know that convulsions are not always present in the cholera, and as they even occur in healthy animals from decapitation, we may infer that they

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are common attendants on a diminished energy of the vital functions, and especially when the latter occurrence is of a sudden nature. Experiments have proved that the section of the nerves in the neck, which lead from the brain to the stomach, produce spasmodic vomitings, which terminate in death ; but it is also found that the stomach contracts by irritating the eighth pair of nerves in the neck ; however it is probable that both these causes act in a relatively similar manner ; as it is natural to presume that the irritation would materially interrupt the healthy nervous communication which existed between the brain, and the stomach. The difference between the progress of malignant fevers in India, and in Europe is very great : when they are of a severe nature they generally terminate fatally more quickly in the former, than in the latter country, without proceeding to that protracted, and excessive febrile state, and furious delirium, which so frequently occur in England, and other parts of Europe ; consequently they do not present the symptoms of putrefaction in so great a degree, as they do in the latter country. Dissections of persons who have died of the plague, yellow, and putrid, and malignant fevers, shew that the stomach, intestines, brain, blood, &c. present similar morbid appearances, or nearly so, to those observed from the effects of the Cholera. The livid, or blue appearances which have been observed occasionally on the surface of the body of patients afflicted with the cholera, tend to shew that the disease would degenerate into a putrid state, if it were not arrested by the rapid progress of the disease.

Predisposing and occasional causes.

Any thing that materially enervates the system, so as to vitiate, or suppress any of the most important functions of the body, may be considered as having a tendency to promote the disease. Unequal states of the weather, by their deranging the action of the capillary vessels of the lungs, and skin, appear to be the most probable predisposing causes of the epidemic form of the disease, as we generally see it appear sporadically, in low, and marshy situations, where the states of the atmosphere more generally become unequal at all periods, and as these places are usually more severely visited with its epidemical effects than elevated, and dry spots ; a bad, and scanty supply of food, intemperance, acrid, and acescent substances taken into the stomach, fatigue, anxiety of mind, and close, and sultry weather, are, most likely, occasional causes of the disease. The sol-lunar influence has been supposed to be great over the epidemic, and it is probable by its effects on the weather, that its operation is extensive in the production of the disease. A low state of the barometer has been observed to attend the principal attacks of the cholera in several instances. The sporadic form of this disease appears to be chiefly confined to the indigent class of inhabitants. The immediate cause of this disease seems to be from diminished excitability, arising from the operation of the foregoing predisposing, and occasional causes, on the vascular, and nervous systems, in putting perhaps into action some contagious principle ; which appears to be in some degree corroborated by our knowledge of the frequent, and sudden good effects from the exhibition of opium, and many stimulants, but it is still more so from observing the great langour, and debility, which so often precede any symptoms of an inflammatory nature.

Symptoms.

The symptoms of this disease are often so little distressing as to lead the patient to disregard them. I have frequently detected sepoys around an encampment with diarrhæa, unattended by vomiting, pain, or any other unusual symptom ;—this state, I have the strongest proofs to convince me, was the commencement of the cholera, as a few of these cases terminated fatally, with the usual symptoms of the disease. After a diarrhæa had existed several hours, I have in many cases found it resist every kind of remedy ; the purging continued, the vascular action became impaired, prostration of strength ensued ; and the patients sunk without any considerable pain. I have often asked these persons why they did not apply to me earlier,—and the general answer was, that as they felt no great inconvenience from the diarrhæa, they deemed it unnecessary, and improper to make a report of a circumstance so apparently trifling.

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I have frequently heard them ask leave to proceed to their duty, immediately after they had taken a dose of medicine; which is very demonstrative of the slightness of their apprehensions of danger. Prostration of strength,—cold sweats,—and depressed vascular action, appear to be the uniform attendants on this disease. The Cholera is sometimes preceded by pyrexile symptoms, nausea, and slight abdominal pains, but it generally commences with a vomiting, or purging, or both of these states together, of a thin, serous fluid, resembling whey, or thin rice gruel, which is at first often mixed with bile, and feculent matter:—the evacuations by stool are frequently ejected with much noise, which has been resembled to that produced by a syringe when forcibly used;—at other times this sound, is not observable, and the evacuations at the latter stage of the disease frequently pass off without the patient's knowledge. Pain, and uneasiness about the epigastrium generally prevails: the pulse becomes quick, and small, respiration weak, the skin gets cold and clammy, the eyes dull and sunken; slight twitchings, and often severe convulsions, come on in the lower extremities, and as the disease advances, they frequently extend to the trunk, and upper extremities; when profuse cold sweats, thirst, hunger, loss of pulse, prostration of strength, a burning sensation of the stomach, restlessness, a painful sensation along the spine, delirium, coldness, and a shrivelled state of the skin become the prevailing symptoms. The evacuations seem to proceed for a long time from the exhalant vessels; but flakes of mucous are occasionally observed in them. As the disease becomes more violent, a considerable quantity of viscid, colourless mucous is thrown off,—which at last becomes less glairy, and more opake,—and occasionally very much resembles pus. The fauces are usually dry; deafness; a suppression of urine, and a general uneasiness of the body, are often complained of. The inflammation being mostly confined to the mucous membrane, the heat of the abdomen is not excessive, and there is not that great degree of tension, or pain on pressure, which is observable in inflammation of other tissues. It has been noticed that several persons have not experienced either vomiting or purging during the course of the disease, and that these cases were the most formidable:—this peculiarity might be occasioned by a greater severity in the attack; or by its taking place in a different organ, or set of vessels in those parts, which are usually the seat of the disease. An insatiable thirst, or hunger,—a burning sensation in the stomach; protracted convulsions; delirium; profuse, cold sweats; glassy, and sunken eyes, with a film occasionally over the cornea; a shrivelled state of the skin; deafness; disagreeable odour of the body; and great prostration of strength, attended with a loss of the pulse, are the usual precursors to death; but the pulse, which in general is weak, and hurried, becoming fuller, and more regular, accompanied with a return of warmth to the surface of the body, and a cessation of the intestinal irritation, indicates a favourable, and speedy termination of the disease. Severe affections of the brain, and of the stomach, and intestines, of a purely local, and inflammatory nature occasionally succeed to a severe attack of the cholera. An unusual langour, and oppression at the precordia frequently precede an attack of the cholera; and many persons have experienced these symptoms in a remarkable degree, who have not suffered from the more formidable ones, which often succeed thereto. Dilatation of the pupils of the eyes, a darkly furred tongue, viscid saliva, and inflation of the intestinal canal, often attend the latter stage of the disease.

Appearances on Dissection.

In those cases which have terminated fatally by the gradual extinction of the functions of life, accompanied with, or without vomiting, or purging, and only slight abdominal pains, and either slight, or no spasmodic affections, a determination of blood to the internal organs was frequently observed; but the internal surfaces of the stomach, and intestines, were frequently found paler, and more distended with air than usual; the contents of which organs consisting principally of a serous fluid, of a white colour, resembling whey; but which was occcasionally found of a grey, or light brown colour. The odour from the abdominal viscera has in all cases been remarkable for its peculiarly offensive smell, and for differing

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from the usual smell of dead bodies. After the more violent form of the disease, the internal surfaces of the stomach, and intestines, have exhibited marks of inflammation, of various degrees; but the more usual appearance, consisted of various streaks, extending from the stomach, to the duodenum, of a deep red colour; in some cases the internal coats were found in an unusually pulpy state, and in others slightly eroded. In a few cases the mucous membrance of the stomach has been found greatly covered with coagulable lymph, on removing which, a bloody, gelatinous substance was discovered in the form of ridges, or elevated streaks; sometimes the liver was enlarged, and gorged with blood; at other times it was observed to be large, soft, light coloured, interspersed with grey spots, and not containing an unusual quantity of blood; but it more often presented a healthy appearance, or a slight turgescence. The gall-bladder generally contained bile of various colours, and sometimes it was found filled, and distended. The venous vessels, especially those of the stomach, and mesentery, were occasionally found of a considerable size, and filled with blood. The spleen, pancreas, and kidneys usually healthy; the urinary bladder usually empty, and contracted; the omentum sometimes turgid, the peritonæum of healthy appearance, the colon often contracted; the lungs frequently collapsed, condensed, of a black colour, and affording much dark blood on being cut—the heart has been observed to contain dark blood throughout; the blood in the venous vessels has been found unusually dark; the brain, and its membranes were generally healthy, but sometimes they were found turgid with blood, and in a few instances an effusion of lymph was observed near the coronal suture, together with adhesions of the membranes of this viscus:—in other cases the sinuses, and the veins leading thereto were filled with dark blood; the contents of the stomach presented a white, light brown, green, or a dark, flaky fluid, but the white fluid was the most constant;—a dark blue, or livid colour, has been observed upon the surface of the body; it is also noticed that a small quantity of bile of a healthy appearance can be squeezed out of the pori biliurii; which circumstance proves that the liver does afford a secretion of bile,—and so does the yellow appearance of the eyes, and skin, which has been noted; however it is probable that there is generally a diminished secretion of bile in this disease, as there appears to be a disposition to allow the passage of the blood into some of the most important glands, without its undergoing the alterations which usually take place in health. Coldness of the surface of the body generally ensues an attack of the cholera in a very short period. It is probable that the lungs may not act properly on the air, in consequence of the atony produced by the disease; and as respiration is considered the source of animal heat, of which the capillary vessels of the body are the organs, it may be presumed that the weakened state of the circulation, and consequent coldness of the body, might be produced by an imperfect action of the lungs, arising from a deranged condition of the nervous system, which is caused by some unknown principle, perhaps by some contagious property of the disease. The blood which has been drawn off in this disease has been observed to be darker than ordinary, and to have the crassamentum loose; the coagulation of the blood has not been very minutely attended to. I am disposed to believe from my observations thereon, that this process takes place, in proportion to the force of the vascular action at the time the blood is removed: when this action is not much weakened, the blood coagulates in about the usual time; but when it is nearly annihilated, it appears to coagulate more slowly, and less firmly. The late experiments on the coagulation of the blood convinces us, that we cannot form any just criterion from the superficial observations which have been made thereon, in the cases of the Epidemic Cholera, and I ought to observe that in one case of this disease in its most advanced stage, I found the blood which was drawn from the arm in a small, and weak stream, coagulate quickly, and firmly, but there was no appearance of the red globules on the crassamentum which are usually seen in healthy blood. In some subjects a faint redness of the mucous membrane of the stomach, interspersed, with blue, or purple spots have been observed, without any unusual appearance from the stomachs of dead subjects. In a severe case of cholera where I had reason to believe, the brain was affected,

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in consequence of the existence of a permanent, and extensive dilatation, of the pupils of the eyes, I found the following appearances on dissection.

A considerable quantity of a light, red fluid under the cerebellum, and around the uppermost portion of the spinal marrow, the lateral ventricles of the brain, and the superior longitudinal, and lateral sinuses were empty. I imagined that the vessels of the pia mater were somewhat, though very slightly, more filled with blood than happens in the ordinary state of dead bodies: the mucous membrane of the stomach was highly reddened to a considerable extent on the fore portion of this organ; on separating this part of the membrane from its connection with the adjacent or nervous coat, by means of a knife, and with my nail I found that its texture, and firmness were destoryed: the intestines contained a grey fluid, and the whole of them were very much inflated: the urinary bladder was contracted, and it contained a small quantity of a white fluid resembling vitiated mucous, or light thin pus, and on cutting into the kidneys I observed a small quantity of a similar coloured matter ooze from a few places of the divided parts: on cutting into the lungs a grey fluid oozed from the divided places, the surface of the lungs exhibited a few red patches of a dark hue, the heart was firm, and completely void of blood, the inferior vena cava was filled with blood, and likewise most of the venous vessels, and it was of a dark colour. A particular circumstance prevented my examining the spinal marrow throughout, which I regret.

Treatment.

Liquids of a mucilaginous, gelatinous, and mild nature, are undoubtedly beneficial in the treatment of the Cholera, as they render the contents of the stomach, and bowels less irritating: it is advisable therefore, to give the patient frequent draughts of warm milk, linseed tea, decoction of mallows, rice gruel, gelatinous broths, or even warm water where none of these drinks are procurable. It is also advisable to make frequent use of these liquids in the form of glysters. These remedies are only of a palliative, and soothing nature; and although they may sometimes sufficiently aid the efforts of nature in removing the disease, yet they ought not to be solely, relied on; for as the different modifications of the animal humours depend upon the action of the solids, it is evident, as an author observes, that it is upon the latter we ought principally to direct our attention, and treatment. Although we may neutralize the acid of ricketty patients, which collects in the digestive tube, yet the disease still remains. Opiates possess the property of allaying the intestinal irritation, and of restoring the disordered functions in this disease, quicker than any other remedy which has been used, and the crude opium appears to have been the most useful in those cases where fluids were quickly rejected. It seems to be the best way to commence with about three grains of the crude opium, or sixty drops of the tincture; or even more in some severe, and protracted cases, and to keep up the effects thereof, by subsequent small doses frequently repeated. I have given very extensive quantities of opium in this disease, without its producing any deleterious, or intoxicating effects; and in such instances I have generally found it calm the universal irritation in the system, and restore the patient to health in a very short period; which happy event has often taken place in the course of twenty, or thirty minutes. I have occasionally noticed the same fortunate result after the exhibition of thirty drops of the tincture of opium, or even a wine glassfull of brandy, or arrack diluted with water. In other cases I have been less fortunate;—although vomiting, and purging had been appeased after the use of opium—which was sometimes given alone, and at other times combined with the submuriate of mercury, and various stimulants, the patient became intoxicated, and although the circulation and heat of the body had been partially restored, yet the unfortunate sufferer, whose life seemed to be protracted by the remedies, gradually expired without much pain, and occasionally with a supervening delirium. Opium has been used with advantage in the form of glysters when combined with mucilaginous liquids; in the shape of liniments, and plasters when in combination with various stimulating remedies, and it has been introduced into the rectum in its crude state with much benefit. The use of mercury has been recommended in

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this disease, especially its submuriate. In many cases this medicine does not appear to act on the system, but when it does produce some visible effects on the body, they are frequently observed to lead to the recovery of the patient. I have occasionally made use of mercury in the form of an embrocation with various stimulants, and seemingly with advantage. As persons who are under the influence of mercury are not always exempt from the cholera, it is supposed that this medicine does not possess the good properties which have occasionally been attributed to it; but this inference is quite inconclusive; for as we often observe this medicine only having a local effect, we may presume that the system might not have been generally affected by it on the attack of the cholera; or if it had been, we may readily conceive that the same peculiarity of weather which is productive of the epidemic, may suspend the action of the medicine on some parts of the system, whilst it may increase it on others, especially on the intestinal tube,---and thereby aid in the production of the disease. Experience has convinced us that sudden exposure to different states of the atmosphere, often suspends the favourable effects of mercury on the system, by producing salivation, diarrhæa, &c. yet when this medicine is given to a person, who is kept in a room of a certain temperature, and not exposed to the vicissitudes of weather, its effects are widely different from those under the former circumstances;—we must therefore admit that this medicine may be frequently useful in the treatment of the cholera, although under certain circumstances it does not ensure the system against an attack of this disease;---yet there are anomalous constitutions on which mercury has such injurious effects, as to lead us to presume, that this medicine might occasionally be equally hurtful in the treatment of the Cholera, as in some other diseases for which it is prescribed. Æther, camphor, the essential oils of cloves, peppermint, &c. and various other stimulants have been exhibited with apparent advantage; but these remedies, as well as mercury, are I conceive injurious in those cases, where they fail in calming, or removing the morbid action of the stomach, and intestines, and in restoring the natural peristaltic functions. We know that the effects of calomel on the stomach, and duodenum, are analogous to those produced by incipient inflammation of these parts, and I am disposed to believe that the effects of this medicine have been often mistaken for those of the cholera. The use of the bitter preparation called drogue amère, and the frequent exhibition of milk, in combination with calcined magnesia, have been much extolled; particularly the latter remedy, which probably proves beneficial by uniting with the contents of the stomach, and intestines, thereby lessening the stimulating effects of the latter upon the mucous membrane of these organs. The vapour bath, when judiciously used, has a tendency to restore the action of the skin, and wrapping the body at the same time in blankets, greatly assists its good effects. The application of powerful stimulants, and blisters to the abdomen, and to the extremities are of great utility. In the Bombay reports, published by the authority of the government, and recommendation of the Medical Board of that presidency, I observed that emetics had been very successfully used in the treatment of the cholera. Being scrupulous in making a trial of this remedy, I have only done so in a few cases which were in a hopeless state, and which had resisted all those remedies which are usually prescribed. I have used this remedy in four cases of this kind; two of which proved fatal, and two recovered—three of these patients were camp followers, and the fourth was the barrack conicopoly of Oudagherry; the latter suffered severely from the spasmodic cholera, for the relief of which he was bled copiously, took opium in various ways, and made use of all the other contingent remedies, which are usually prescribed: on the eighth hour of his disease, he was visited with the majority of those symptoms, which are indicative of a speedy, and fatal termination: at this period I totally despaired of his recovery, when I commenced, and continued giving him a third of a grain of tartarized antimony every fifth minute, with large draughts of warm milk, until it had some sensible effects on the stomach, which it very apparently had in the period of forty minutes, when he experienced considerable nausea, accompanied with occasional vomiting. I then discontinued the use of the tartarized antimony, and ordered a continuance of the milk. In the period of an hour, the system present-

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ed a favourable change ; the cadaverous feel, and collapsed state of the countenance, which previously prevailed, gradually disappeared, and the patient progressively recovered. The other case which terminated favourably very much resembled this, and the treatment was similar, with the exception of the exhibition of milk ; in lieu of which, thin meat broth was given. In the two cases which terminated fatally, the patients survived the attacks much longer than ordinary. I have given emetics in some cases which had a few of the precursory symptoms of the cholera, (and which would most probably have led to this disease if they had not been checked,) with perfect success. An author says, in evacuating by the assistance of emetics such matter whose presence irritates the digestive tube, we imprint a series of directions, contrary to the tonic action of this organ, and by these means we appease the excessive, and tumultuous increase of its peristaltic motions : emetics may therefore be of advantage in inflammation of the mucous membrane, in changing the point of irritation, and in distributing it to other parts of the body. Lind has spoken of the efficacy of emetics in the treatment of the dysenteries of hot countries ; and Sydenham, of certain obstinate diarrhæas, which succeeded to certain fevers, when they were not treated at their origin with emetics. Although the use of this remedy may tend to remove the morbid action of the stomach, and intestines, in the Cholera, under certain circumstances, yet its adoption does not appear to be justifiable in our present ignorance of the exact nature of the disease ; and as I have not observed that it has been mentioned since the publication of the Bombay reports, I imagine that it has been abandoned, or merely made use of in those bilious affections, which are sometimes the precursors of the Cholera. I made a trial of the vapour of heated sulphuric æther, by letting my patients inhale it: I made use of it in the severest case of the spasmodic Cholera that I have observed, the subject of which was the drum-major of the first battalion of the fifteenth regiment of native infantry, but as I also previously, and conjointly, made use of the remedies usually prescribed, I cannot determine how far it was beneficial ; but from having been successful in this case; as well as in most others where I have used it, I am disposed to conclude that it has proved of great benefit. It is probable that the introduction of other remedies by the channel of respiration, may be beneficial in those cases, where the stomach is not advantageously acted on. The powerful astringents have not apparently been used in the disease—although they might occasionally check the alvine evacautions, it is not probable that they would be very beneficial, unless they could remove the seat of irritation, which it is not likely they could do: General bleeding appears to have many advocates, and although I think it may be beneficial in some cases which are attended with severe symptoms of inflammation, yet I have not much reason to speak favourably of the remedy; from my own experience. It is probable, that local bleeding would be useful ; and that fumigations, which contain much oxygen gas; may be also advantageously employed in unhealthy situations. The most constant sources of failure in the treatment of this disease, are from not being able to proceed in the use of remedies with sufficient uniformity, and promptitude, in consequence of the obstacles which a camp life opposes thereto, and from the laspe of time which too often occurs before the patients apply for medical aid ; whenever the disease has been violent, and long protracted, there are but faint hopes of restoring the very impaired state of the vital functions,—and moreover as it is very probable that the slender epidermis which sheaths the nerves of the stomach, and intestines, against the undue action of the food, which is received, is destroyed, the medicines which are internally used must often increase the irritation of these organs.

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It is somewhat extraordinary that notwithstanding the disease, we denominate; the Spasmodic Cholera of this country, has in different districts of the continent, raged with more or less severity for several years, so little has been ascertained upon the most important of its points. The ignorance which obtains upon the subject of its pathology, is fully evinced by the various, and discordant opinions which exist concerning it, and but little examination is necessary to lead us to the conclusion that all are alike susceptible of refutation, by the observation of one individual case. As is the case with other diseases, so it is with cholera; as long as we continue ignorant of its pathology, so long may our practice be conducted upon an *erroneous* principle, and consequently prove far otherwise than successful; or, the adoption of our remedies, must be a matter purely of experiment.

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Nothing can more forcibly demonstrate to us, that in an attack of this disease some most important organ of our body has been affected by a morbid change, than the fact of the rapid exhaustion of vital energy, and sudden depression of the powers of life, which so immediately ensue; we are assured that this affection results from the inhalation of some noxious material of the atmosphere; but until we are acquainted with the exact organ, in which this morbid change has been induced, our exertions for its relief must necessarily end, in a struggle with its effects, in the absence of the more satisfactory result of exterminating the disease itself.

The opinion of one inquirer upon this subject is, that the symptoms *pourtrayed* to us in an attack of this disease are the consequences of an inflammation of the stomach, another of the liver, and a third of the intestines, and each of these opinions has its advocates, but it is worthy of remark that in proof of the little reliance placed upon these doctrines by their supporters, their practice is uniformly the same. In order to the proof that the pathology of this disease is inexplicable upon the admission of either of these diseases, it is only necessary to remark, the immediate suppression of the process of secretion, which uniformly obtains under all circumstances of inflammation, attaching itself to either of these organs, and to contrast with this, that copious secretion which takes place in spasmodic Cholera from the surface of the stomach and intestines. In a plurality of cases the entire absence of pain, is also another indication of their incorrectness.

The utter impossibility of frequent examination of the bodies of those, who die from this disease, must ever operate as an obstacle to the desirable acquisition, of ascertaining beyond a doubt, the organ which has been affected, and the nature of the morbid change which has been occasioned; but, at the same time, much might be ascertained in these particulars, by a reference to the physiology of those organs, which are secondarily concerned, and by examining with minuteness, their dependency and connection, with the higher organs.

It is by a process of this kind, and by an analysis of the several effects, accruing to the disease, spasmodic cholera, that I propose to trace the pathology of this disease, and in so doing, however unsuccessful the attempt, I beg leave to hope that the motive may be ascribed to the desire of collecting information upon the subject of a disease, deservedly considered the most fatal of epidemics.

We are already in possession of a sufficient number of facts to shew, that the disease in quetion is an epidemic, not being endemic to any particular district, but in resemblance to other diseases of the same class, dependant on the presence of some noxious material in the atmosphere; there are however, some few points of distinction, between this disease and other epidemics with which we are better acquainted; in the first place, epidemics for the most part are confined in their appearance, to a particular season of the year, or rage during the prevalence of a wind, blowing from a particular quarter. 2ndly, They commence usually in a mild form, and gradually increase in point of malignity, until they have attained their highest, when they as gradually disappear. 3dly. All other epidemics are attended uniformly in the first instance, with an increase of the action of the heart, constituting fever, and whatever might be the result, the sedative or diminished action is uniformly preceded by a previous state of excitement. 4thly, And most particularly, the Spasmodic Cholera as an epidemic differs from all other epidemics in the compatability it maintains in the co-existence with other diseases; the small pox and measles being incompatible with each other, no sooner does the one appear than the other uniformly recedes; it is the same with plague, typhus, and all other fevers of this class; they are all incapable of existing toge-

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ther; but with the Cholera it is different, for nothing is more common than to observe the raging of this disease, together and at the same time with intermittent fever. These are points in which the Spasmodic Cholera is essentially at variance with all other epidemics, for as far as experience has availed, it has served to demonstrate that Cholera, is limited in its ravages to no season of the year, it has shewn that the prevalence of a particular wind has no effect, either in producing it, or destroying its operations: all barometrical observations have been unattended with utility excepting in the establishment of the fact, that the variations of the quick-silver have no power of indicating either the probable approach, or absence of this disease.

The abrupt manner in which the Spasmodic Cholera, appears and disappears, and the suddenness with which a vast number of persons are affected in its most malignant form, together with that direct sedative effect resulting to the action of the heart, from its operation, are also calculated to render it distinct from other epidemics.

That, in conformity with epidemics generally considered, the Spasmodic Cholera is dependant on some change induced in the atmosphere, by the solution of some noxious matter, there can be no reason to doubt; but to point out the precise nature of this matter, or from whence it is derived, must ever be attended with infinite difficulty, the more especially as the variations of the barometer afford us no assistance. In its effects however upon the functions of the body, it appears to resemble very forcibly, those which are produced occasionally by the accidental inhalation of *carbonic acid gas*, and this particularly in that direct depression of the powers of life, which uniformly ensues, from the moment that an individual is affected with this disease. This effect is precisely similar to the poison of carbon, cases of which are sometimes exhibited to us, by persons who have incautiously descended wells, or slept in apartments with charcoal fires, and the idea of the similarity of the two affections, is considerably strengthened by the observation that low and damp situations, are those in which the disease most frequently occurs. I am not prepared at this moment however, to continue the discussion upon this subject, or to shew that the nature of the change, which the atmosphere undergoes in its production of cholera, is depending on a superabundance of the material carbonic acid gas, but this opinion was very strongly suggested to me by the impression first made upon my mind, in witnessing this disease. From whence the superabundance of this material can within these few years suddenly have been derived, it is very difficult to determine; but it is more than probable that it is in some measure connected with that vast quantity of stagnant water, and other putrid matter distributed in every district of the enormous continent of India; and it hence becomes a question how far the clearance of such noxious agents may be attended with a direct annihilation of the disease in question; certain it is, that in the marching of troops, it is of the utmost importance to the safety of the camp, as connected with cholera, that the highest ground should be uniformly chosen, and a distance observed from all collections of water, to the utmost extent compatible with the necessary convenience to camp followers. In my march with the details of the 1st and 8th Light Cavalry to Seroor, under the command of Major Cameron, during the months of February, March, April and May, I had occasion to observe the necessity of a strict adherence to these particulars. No case of Cholera appeared in camp until our arrival within a few marches of Chittledroog, when unfortunately having pitched on the banks of a nullah containing a large quantity of stagnant water, it was lamentable to observe that in a few hours from the time of our arrival no less than 14 cases of sepoys were admitted into the hospital suffering from the spasmodic Cholera in its gravest form; the number of followers which were affected I am unable to relate, but that they were exceedingly numerous, might safely be concluded, from their majority in point of number, and their limited means of subsistence contrasted with the sepoys, constituting the detachment. I took an opportunity of remarking to the officer commanding, the probability of the disaster having been occasioned by the encampment in the situation above described, and I have the satisfaction of observing that much attention being subsequently paid to this in particular, the disease in a few days suddenly left the camp, and not three cases occurred afterwards in a march of two months, then to be completed. I shall at the close of these observations, subjoin an account of these cases, their mode of treatment, and their event; in the relation of which, I shall endeavour to demonstrate the contagious nature of the affection, Spasmodic Cholera.

The proximate, or predisposing cause of this disease, appears, as in most other epidemics, to be constituted by *debility*, from whatsoever circumstance arising; it is for this reason more fatal among those natives, whose prejudices or limited means of procuring provision, render them of a weakly habit; but any cause which is capable, of diminishing the power of the constitution, to resist disease, will necessarily predispose the individual to its reception.

Thus much having been said upon the particular nature of this disease, its peculiarities as an epidemic, its remote and predisposing causes, I propose to examine more particularly into its symptoms, and subsequently to advance some remarks regarding its pathology.

I have before observed, that the rapid exhaustion of nervous or vital energy, and the sudden depression which the action of the heart sustains, on the first attack of this disease, conclusively evince to us, that the organ affected is one of the most essential to our existence; indeed, the more we examine into the nature of the effects consequent on an attack of the Spasmodic Cholera, the more unequivocal does the fact appear, that the first consequence of the Epidemic, is to produce a morbid change in some viscus, not *secondarily*, but *primarily* essential to the continuance of life: such an examination will demonstrate to us, that the organ affected is nearly connected with the functions of the heart; it must demonstrate to us, by the alteration which takes place in the nature and quantity of the secretions of the digestive organs, that the viscus in which the morbid change has been induced, is intimately concerned in the regulation of the function of secretion in these organs. In order to the proof of this opinion it is only necessary to observe, 1stly, the short space of time which is allowed to elapse, from the first apparent symptom of the disease to its final termination, the quick succession of the most alarming symptoms to each other, and above all that peculiarity of expression which pervades the countenance; 2dly, this opinion with regard to the nature of the affected organ, and its connection with the nervous system of the heart is well supported by the circumstance, of the direct depression of the heart's action, and short period allowed to intervene, before the total suspension of the pulse takes place. These are among the most marked symptoms of the disease, and they are such as we are taught both by physiology and pathology to believe, can never be produced, by any injury accruing, from disease, to the secondary order of viscera. It is impossible to believe agreeably to the *best* principles of these sciences, that any morbid change sustained by the stomach, liver or intestines, could be productive of such a combination of effects, as are pourtrayed to us in an attack of the spasmodic cholera, for the reason, that these organs are only of secondary importance to life, through the medium of digestion, and have no direct influence with the functions of the heart. It is moreover amply proved by experience in the diseases of these organs, that they are utterly incapable of producing effects similar to those occasioned by the epidemic spasmodic cholera.

The viscera of the higher order, or those which are directly essential to life are, the lungs, the heart, cerebrum and cerebellum, each of these are destined to the performance of functions of that essential nature, that any interruption to their due activity, must necessarily operate in the speedy extinction of vitality. I have heard it advanced, that in the spasmodic cholera, the lungs are principally affected; but from our knowledge of the effects, which commonly result from pulmonary diseases, it might be inferred, that if on dissection inflammation of these viscera should be discovered, such morbid change has been the effect, rather than the cause of the disease itself; we are fully assured that inflammation of the lungs, can never be productive of the direct depression of the vital powers, the peculiarity of secretion taking place in the intestines, and lastly those painful spasmodic contractions which the voluntary muscles undergo, and all of these in the absence commonly of pain, and the whole occurring in the short space of a few hours.

All of these symptoms point out in the strongest possible manner, that the part affected is of a nervous structure; we observe the immediate influence exercised over the nervous system, and irritability of the heart; we discern that the organ affected must be possessed of the utmost possible nervous influence, by the derangement which takes place in the function of secretion in the chylopoietic organs; but above all, the spasms which almost uniformily occur before the fatal termination of the disease, places it beyond a doubt, that the nervous system is that in which the injury has obtained.

This being the case, let us examine what part of the system it is, which, suffering from disease, can be capable of producing symptoms, such as those exhibited in Spasmodic Cholera.

It is a remarkable feature of this disease, that the intellectual powers, continue to operate with vigour unimpaired, up to a period closely approaching to its fatal termination, and it hence would become a matter of direct necessity to conclude, that no material alteration can have taken place, either in the structure, or functions of the cerebrum; but independent of this circumstance, it is to be observed, that the natural condition of the senses, the nerves subservient to which take their origin in the brain, is uniformly maintained, which is principally indicated by the dilatation and contraction of the iris, on the admission of the appropriate stimulus. From these circumstances we are enabled to infer, that the brain is not the organ, the disease of which constitutes the pathology of the Spasmodic Cholera, but by the cerebrum is here meant the brain proper, and distinctively considered from its appendages, the cerebellum and medulla oblongata. These organs although closely allied to each other, from their connection and similarity of structure, are in point of fact destined to the performance of functions, wholly different; the cerebrum is devoted to the purposes of intellect, and every phenomenon appertaining to the external senses; and the other organs, the cerebellum and medulla oblongata, are subservient to, (or more strictly speaking) preside over, the functions of animal life. The fact of the variety of function, performed by these different departments of the same organ, has of late years been anatomically demonstrated by those celebrated anatomists Gall and Spurzheim; but the circumstance is clearly pointed out to us by the different effects, resulting from an injury inflicted on the cerebrum or cerebellum; in injury of the cerebrum the intellect is directly impaired, whilst the functions of animal life are almost perfectly performed; and in injury of the cerebellum, the functions of animal life are violently disturbed, to the speedy destruction of the patient, whilst the intellectual powers are but little deranged; a blow upon the back of the head will kill, whilst the same violence inflicted on the forehead will be unattended with any serious consequences; a large portion of the cerebrum will admit of being removed, with the consequence only of impaired understanding; but the smallest interference with the cerebellum, will directly destroy life—Experience then having shewn the different purposes to which these different organs are destined, I shall proceed to shew, that the organ in which the morbid change takes place, in order to the production of the symptoms of Spasmodic Colera, is the *cerebellum*.

The Spasmodic Cholera although in many particulars, decidedly different, resembles, perhaps more than any other, the disease, *tetanus;* and this resemblance is more particularly exhibited, in the absence of every discernible effect from opium, calomel, and other medicines during the continuance of the affection—The countenance and the rapid progress of the disease, in the absence of any, sometimes even the slightest pain, are other points of resemblance not to be overlooked; I have mentioned this circumstance because dissection has demonstrated, that in tetanus, both symptomatic, and idiopathic, the cerebellum and medulla oblongata, are the only organs in which any morbid change has taken place; these are discovered almost uniformly, with evident marks of pre-existing inflammation.

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I am not prepared to assert that in the Spasmodic Cholera, inflammation of the cerebellum and medulla oblongata, exists as in the disease, tetanus; but that *these* are the ***organs***, in which a morbid change of *some kind* has taken place, giving rise to the several symptoms, I am, perhaps too confidently, assured. The symptoms of Cholera, taken collectively, result from a direct depression of the powers and functions of animal life; where then can we look with more prospect of success, than to that organ which presides over, and is subservient to the purpose of regulating these functions, for the pathology of the disease? Certainly to none! A morbid change induced in one, or both of these organs, viz. the cerebellum, and medulla oblongata, will readily account for all the symptoms of spasmodic cholera; for the depressed pulse, the anxious countenance, the sudden exhaustion of nervous energy, the suspension altogether of pulsation in the radial arteries, the unnatural secretion from the stomach and intestines, and above all, the spasms of the voluntary muscles, all these are not only capable of being accounted for by diseases of the cerebullum, but are such as might even have been anticipated from such an affection, had the Epidemic Spasmodic Cholera, failed to demonstrate the lamentable fact. The almost direct communication, and utter dependency of the action of the heart, upon the cerebullum and medulla oblongata, through the medium of the parvagum, and great intercostal nerves, will very readily point out, that the existence of disease in the cerebullum of whatsoever nature, must necessarily occasion that derangement, and subsequent almost intire cessation of the powers of life and the action of the heart, which so uniformly take place in the Spasmodic Cholera. There is no other organ of the body, a disease of which, can so directly influence, to so great an extent, the action of the heart, besides the cerebellum; and it is equally clear, that as the action of the heart, is dependent on its nervous communication with the cerebellum, so any morbid change induced in the latter, must operate in producing a derangement of the heart's action.

The nervous dispensation taking place from the cerebrum and medulla oblongata through the medium of the spinal marrow, to all parts of the body, readily explains why a morbid alteration in the cerebellum, should give rise to those spasms of the voluntary muscles so generally occurring in the latter stage of the disease.

The secretory systems of the liver, and intestines, are, for their due dispensation, more intimately connected with, and dependent on the cerebellum and medulla oblongata, than might at first appear, unless it be remembered, the influence exercised over this function by the great *intercostal nerve.*

This nerve, although not forming a direct communication between the secreting system of the intestines, and the cerebellum, is closely in alliance with it in consequence of its ganglia, and it is to this we are to assign the unnatural change which takes place, in the evacuation of that peculiar secretion, from the intestines which is evacuated in the spasmodic cholera, and which is one of the most remarkable symptoms.

In a state of health, the intercostal nerve exercises its influence, in obtaining a natural secretion from the liver, and intestinal canal; it is at this time proportioned in point of quantity, and adapted in its nature to, the great purpose of the process of digestion; but no sooner does the cerebellum suffer from disease than the effects being felt throughout the nervous system, this natural order of things becomes reversed, and the consequence is, that the secretion becomes vicious and unnatural; it is poured forth in large quantities, which are evacuated by the

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stomach and intestines, and constitutes that symptom which characterizes the disease. I have no hesitation in saying, that the more extensively an examination of the circumstances of spasmodic cholera obtains, the more firmly must the doctrine be established that it is an epidemic, the pathology of which, is explicable wholely and solely, upon a morbid change induced in the cerebellum and medulla oblongata. There is one peculiarity in the spasmodic cholera, which in a very eminent degree is corroborative of this opinion ; it is the tinnitus aurium, and deafness, which take place towards the termination of the disease ; in explanation of this symptom, it is only necessary to refer to the origin of the auditory nerves, and their situation will teach us, that they must be necessarily involved in any, (whatsoever disease) obtaining in the cerebellum ; in fact, by the opinion that spasmodic cholera is referrible for its pathology to a disease of the cerebellum and medulla oblongata, the whole of its symptoms are explicable upon the purest principles of physiology, and they are incapable of explanation upon any other principle. It is next to be explained what is the nature of that morbid alteration induced in these organs, in which originate the symptoms of the disease ; whether or not it consists in the inflammation, so commonly the disease affecting other organs, or in any other alteration with which we are less perfectly acquainted.

It is difficult to say much, or speak with any degree of confidence upon this particular, as we are so little in possession of frequent opportunities of dissection ; and moreover as it is even possible that dissection after death may not discover a state of inflammation existing during life. The absence of pain cannot be considered as conclusive either for, or against the existence of inflammation in the cerebellum, as it is by no means certain, that inflammation of the matter of the brain, independently of its membranes would be productive of an increase of sensibility, as it is still a disputed point whether or not the substance of the brain or cerebellum be endowed with sensibility, and as inflammation even of trivial extent in an organ such as the cerebellum, would be sufficient for the production of consequences such as are pourtrayed to us in Spasmodic Cholera.

But besides this, the disease, tetanus, in which no particular local uneasiness is discoverable, is proved by dissection to be the result of inflammation in the cerebellum and medulla oblongata, clearly shewing, that pain is by no means essential to inflammation, and especially of those parts, or organs of cerebral structure. However well supported the opinion by facts, that the Epidemic Spasmodic Cholera is the result of a morbid change induced in the cerebellum and medulla oblongata, the consequences of which are the symptoms exhibited in an attack of that disease, I beg to be understood that I by no means assert that it is inflammation ; it is sufficient for my present purpose to shew that such are the grounds for the opinions that Spasmodic Cholera is referrible for its pathology, to a morbid change induced in the *cerebellum and medulla oblongata.*

In the former remarks which I had the honor of forwarding to the Medical Board, I confined myself to the endeavour of elucidating in some degree the pathology of the Spasmodic Cholera, and I have also observed upon the probable nature of the change, induced in the atmosphere, giving rise to the disease in its epidemic form.

With regard to the former of these endeavours, I have attempted to shew, that a vast number of circumstances attendant on the disease are capable of explanation, and can only be explained, by admitting that a morbid change has taken place in the nervous structure of the cerebellum and medulla oblongata, and this opinion appears to derive very considerable corroboration from the analogy which exists between many of the symptoms of Spasmodic Cholera, and other diseases of the spasmodic class, the majority of which, are attributable to a derangement of the nervous structure of the cerebellum.

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A very remarkable effect of the Spasmodic Cholera is the *deafness* which almost uniformly takes place, at one period or other of the disease; it generally occurs towards its close, but not unfrequently at its commencement; I have at present before me the notes of two cases in which deafness had taken place to a very considerable extent at a very early period, and even before the other symptoms were sufficiently marked to render unequivocal, the nature of the disease; the deafness here mentioned is a symptom, I believe, which has not been very often remarked, but it is of infinite utility in the present investigation, in as much as it points out in the most decisive manner, that some immediate disorganization has taken place in that part of the cerebellum connected with the origin, or passage of the auditory nerves. It is impossible to suppose that any disease, however violent and extensive, of any other organ, excepting the cerebellum, could occasion the symptom thus generally, if not universally pourtrayed, nor is it capable of being considered merely as a sympathetic affection, the consequence of disease in some remote viscus, as there exists not the smallest evidence of any such disease.

In my own case, which occurred at this station, some few months ago, when marching with Cavalry detachments to Seroor, the deafness which supervened almost immediately to my first attack, was so sudden and complete, as to render me incapable of hearing voices, even in an exalted tone, and this at a period when but little debility, and not the slightest aberration of intellect had occurred; it was accompanied with that tinnitus aurium, or singing in the ears, which is usually observable in affections of the auditory nerves, and enquiry will always, or at all events in most cases, discover the existence of a similar sensation.

Having thus much observed upon the subject of the situation, and identity of the organ, affected in Spasmodic Cholera, I shall proceed to the probable nature of the disease, which the organ sustains. Although I have before said that I did not conceive it by any means certain, that the disease, or altered state of the cerebellum consisted in inflammation, I think it is more than probable that it is so; it might certainly be immediately objected that pain, the almost universal attendant on inflammation, is absent in a plurality of cases in the Spasmodic Cholera; a closer examination however upon this subject will at once overrule the objection here mentioned. It is to be observed, that the cerebrum and crebellum although the organs being the immediate source of all sensation, are in themselves, in a very great measure, destitute of this faculty; that, cerebral mass will admit of inflammation, and even external mechanical injury, in the absence of pain, is amply illustrated in a vast variety of cases; but the two cases which bear most forcibly upon this subject, are the examples afforded us in the diseases, tetanus, and hydrophobia, in both of which, inflammation after death is uniformly discovered to have existed, and yet during life, not the slightest pain has been experienced; the former of these diseases resembles, in several particulars, the Spasmodic Cholera. It will hence appear, that the absence of pain is by no means an objection to the probable existence of inflammation in the cerebellum; but independently of this, I do not conceive it by any authority to have been advanced, that any organ is susceptible of a disease, of a nature not connected with inflammation and its consequences. A frequent opportunity of inquiry, I esteem it very probable, would meet with the result, that a patient suffering from the Spasmodic Cholera, is not altogether exempted from an uneasiness in the region of the neck, immediately in the neighbourhood of the cerebellum.

The uneasiness here mentioned does not probably amount to what would be termed pain, but that it is a common occurrence for a patient to complain of stiffness in the part, I remarked at the time when it first occurred to me, that it was inflammation of the cerebellum which constituted the epidemic Spasmodic Cholera; opportunity has since been wanting to establish, by repeated inquiry, the existence of this particular symptom, but I feel somewhat assured, that opportunity is only necessary to this result. The more we say upon this subject, the more must we lament that the prejudices of the natives will oppose themselves to the desirable acquisition of frequent opportunities of dissection; prejudices at once

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dangerous to oppose, and certainly destructive in which to acquiesce. Unwilling to trespass longer than necessary upon the time of the Medical Board, I shall leave the subject of the pathology of the Spasmodic Cholera as it stands, and proceed to offer some remarks upon its *contagious* nature.

The vast difference of opinion which exists upon this subject, renders it impossible to intrude an observation, but with the utmost diffidence.

An argument which I have heard cited to the proof of its being a non-contagious disease, is that, it is an epidemic, capable only of communication by the means of the atmospheric air. That it is an epidemic there cannot be the slightest doubt; but it is by no consideration, incompatible with diseases of this kind, to be also of a contagious nature; on the contrary, examination will evince to us, that epidemic diseases are very generally, if not universally, capable of being communicated through the medium of contagion. Typhus fever, in the first instance, attacks the population of a particular district, but none who have ever witnessed its ravages, will be found to question its frequent propagation through the influence of its contagion; small pox commences its scourge in the form of an epidemic, but I would ask, is it not likewise a contagious malady? It is the same with measles, with scarlet fever; and indeed it would appear, that the epidemics, for the most part, however certain it may be, that they depend for their origin, on a morbid change induced in the atmospheric air, are susceptible of communication, and consequent propagation by contagion. The only examples to the contrary, are the plague, and intermittent and remittent fevers; the former of these might well be doubted, and the latter considered rather as endemics.

As it does not therefore appear to be incompatible with an epidemic, to be also a contagious disease, but on the contrary, that such is very generally the case, let us examine the facts which occasionally occur, with regard to the Spasmodic Cholera. A corps, or detachment, on the route of march, are assailed with this disease; a number of individuals are suddenly affected; the disease is committing its ravages in the character of an epidemic, in consequence of its prevalence at the village or place of encampment, but at a very short distance from this spot, in a number of instances, no Cholera is prevailing.

Such being the case it might naturally be expected, that the removal of the troops from the ground on which they were attacked, to a spot in which the disease did not exist, would at once prevent the occurrence of other cases. Such would undoubtedly be the case, were the disease simply epidemic, and not contagious; but widely different is the fact, which I have more than once had an opportunity of observing.

A corps or detachment suffering from Cholera, in consequence of encamping within the influence of a tainted atmosphere, although they shall remove far without its influence, where no Cholera is raging, do not rid themselves, for a considerable number of marches, from its ravages; but on the contrary, the disease will leave the camp slowly, and reluctantly, and cases will continue to be propagated for several days, solely by infection. I conclude it is by contagion, because at the spot or ground on which these cases are occurring, no Cholera is prevailing.

I have myself witnessed this more than once, and dare to say, that an enquiry into the particulars of many other marches made by regiments, corps or detachments, will administer to the confirmation of this observation. To mention particular instances in which the disease, Spasmodic Cholera, has been communicated by one individual to another, through the medium of contagion, is necessarily attended with much difficulty, because as it generally happens that the whole of a body of men, are alike within the influence of an atmosphere charged with the epidemic virus, so all are alike susceptible of its consequences. It is however most undoubtedly to be observed, that those individuals who are either accidentally, or necessarily attendant on those who are affected, are exceedingly liable to the disease; I think it is to be observed, Asst Surg. E. Chapman, General Remarks on the Epidemic Cholera, 1821.

that a very large proportion of medical officers have suffered from its attack; and in my own case, I feel the utmost confidence of having experienced it by infection. During a march, performed some months since, at a time when no Cholera was prevailing, an orderly havildar was suddenly affected; being anxious for his recovery I remained in the hospital for several hours, watching the progress of his disease; I felt a little nausea at the moment of quitting the tent, but attributed it to the peculiar fetor which evolved from the evacuations; on the following morning I was attacked with Cholera, which had nearly proved fatal; no other case occurred. In the same detachment, a short time previously it happened, that a woman who was very anxious for the safety of her child, slept in the hospital tent, in which several choleric cases were present; in the morning she was attacked with Cholera and died: her child recovered. Besides this woman, three orderlies, attendant on the sick, slept within the hospital, and in the morning one of these was attacked but recovered; thus it will be seen that four individuals sleep in an hospital containing the infection of Cholera, and that two are on the following morning attacked with the disease, being one half of the whole exposed to it; whereas from the whole camp, consisting probably 1500, or 1600, not five cases had occurred. I look upon this as an unanswerable proof of the contagious nature of the Spasmodic Cholera; I noted, at the same time, several other examples in which the disease appeared to have been communicated through contagion in the tents of commissioned native officers, among their families, resulting from their privilege of remaining in their own tents, when suffering from sickness.

Whether, or not, the disease in question be contagious, is a subject of infinite importance, and one which will require a vast experience unequivocally to determine; but where the slightest gleam of doubt obtains, it is surely better to adopt the means usual for the purpose of preventing its propagation, by appropriate *quarantine* of troops on the line of march, by preventing their immediate entrance into stations, when under the influence of Cholera. By these precautionary measures, I conceive it possible to preserve the lives even of thousands of individuals.

That the disease is contagious appears to have been observed by the natives themselves, and it thus commonly happens that the sick are avoided by those, whose duty does not call on them to attend. A village in which Cholera is prevailing, is usually evacuated for a short period, until the disease is annihilated; these, and many others, are the proofs of their opinion of its contagious nature.

From what I have observed, I cannot avoid looking upon the disease as infectious, although I am fully aware of the prevalence of the opinion to the contrary. There are probably many objections which will admit of being advanced in opposition to this opinion, but facts must be allowed their due weight in the discussion, and in some measure be permitted to supersede a trivial objection, rising out of a strict adherence to established doctrines of disease. It is also to be remembered that, although contagious, like all other diseases of the same kind, a peculiar condition of body, a certain predisposition, must obtain on the part of individuals for its reception, a circumstance which at once explains the frequency with which individuals are exposed without suffering from the infection. I now conclude with soliciting a favourable consideration of these remarks from the Medical Board, and with their permission will offer them some further observations upon the treatment of this disease, founded upon the principles attempted to be established in the foregoing remarks.

Amongst the variety of remedies exhibited in cases of Spasmodic Cholera, there is not one, I believe, which has not at different times, both failed and succeeded in the curative result; it hence becomes a matter of inquiry how far the disease itself, unassisted by any remedy whatsoever, is susceptible of self-annihilation—I should rather conceive that every individual, who has had an opportunity of making the observation, will agree with me in remarking, that a number of cases

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of the most decided, and indisputable Cholera, do terminate otherwise than fatally, in the absence of every medicinal means, and in some instances, under circumstances, apparently of the most aggravating description. I had occasion to remark this in the example of a number of camp followers, who were attacked with the disease, and who, obstinately refusing the means prescribed, and without an opportunity of obtaining even spirituous liquors, did ultimately recover, notwithstanding an unavoidable exposure during the night, to the cold and humid atmosphere. The circumstance of a horsekeeper, I also particularly notified, as from his situation near my own tent, I am assured, that he neither had recourse to native medicines, nor would he take any thing which was recommended him; and yet this man recovered, altho' his circulation had become nearly extinct, his feet were cold, and the covering of a sheet was all that he could procure; after he remained some hours in this condition, a sound and natural sleep came on, during which time, his pulse and general circulation was restored, and when he awakened, he was perfectly well, with the exception only of excessive debility. I mention this as a case on which I have not the slightest doubt, that it was pefectly divested of all medical interference; but it is an occurrence by no means so uncommon as is generally believed; the same thing I have witnessed more than once, when marching in the month of May 1820, from Poonah to Dharwar, in the different villages through which I passed, and in which the disease was then committing its ravages. From these facts I am decidedly of opinion, that nature in this, as in every other disease, is, in a vast number of instances, equal in her resources to the preservation of life; by what means, or by what process, (although a matter of very useful inquiry in as much as it would indicate to us the nature of the remedies we should employ), it is a difficult subject on which to enter, but I think it would appear that the restorative power of sleep is the medium through which this fortunate result is brought about. In whatever disease a rapid exhaustion, or depressed circulation is the immediate consequence, it will be uniformly observed, that nature has direct recourse to the phœnomenon, or function, of sleep as a means of restoration. If we commence with the instance of excessive hæmorrage, we shall find that nature in order to combat the exhaustion has recourse to sleep, the usual attendant on excessive bleeding. The sleep which supervenes to the depressed circulation, occasioned by extreme cold is also another example; in fact in every instance in which the circulation is by any means diminished or depressed, so does nature obviate, and endeavour to combat that depression by the restorative power of sleep. I think the same might be observed in Cholera, for I do not remember an instance in which the patient had sleep procured for him, even for a few hours, who did not subsequently recover; it is evidently an occurrence purely natural, because it sometimes occurs, when no means have been adopted for its procurance, and that too, with a decidedly curative effect.

Although there can exist no doubt that in the Spasmodic Cholera, nature is occasionally competent to the cure, I do not mean to infer that the use of medicinal means is not absolutely necessary; I think however it is a circumstance from which might be deduced, the caution required in determining the precise effects, whether deleterious or beneficial, which are employed. I would not say because I had observed a patient recover, after the use of calomel, that the calomel had cured him; or even after the exhibition of magnesia itself, would I say, that magnesia had effected the cure; for, it was impossible to deduce an inference of this kind fairly; but from an aggregate of a vast number of cases, in which these remedies, have been singly, separately, and in combination with no other means, whether internally, or externally, exhibited. In one case I gave to a patient simply the oleum terebinth, in large doses, and that patient recovered; but I am much inclined to doubt the efficacy of the remedy, because it has not been exhibited on a large or extended scale; and it is more than probable that nature might have effected the cure independently of the medicine. It is impossible to place in a more glaring light, the mischief resulting from the present system of experimental treatment, which prevails in the Spasmodic Cholera, than by making the observation, Asst Surg. E Chapman, General Remarks on the Epidemic Cholera, 1821.

that all the remedies at this moment adopted, are directed to the purpose of combating merely with the symptoms, or effects of the disease. In the Spasmodic Cholera, an irritation of the stomach and intestinal canal, is a very prominent symptom of the disease, and large doses of opium are administered, with the view of checking it ; would it not be more philosophical first to inquire, what is the cause of this irritation ? from a disease of what organ does it occur ? and we might even go further and inquire, is it advisable to check this vomiting, and diarrhæa ? or are they not the curative means, by which the system is ridded of some noxious and poisonous matter, which has been imbibed into the system, and which has been productive of the disease in question ; the same method of reasoning applies equally to the use of external heat, the intention of which is to obviate the coldness of the extremities, and the general deficiency of circulation which at the moment prevails. All this points out the necessity of our adopting some principle of a general character, by which to be guided in our plan of treatment ; and as I have before spoken at some length upon the nature of the pathology of this disease, I purpose here observing upon the means which I consider, with the utmost deference, the most likely to be attended with success.

In my remarks contained in a former paper, upon the subject of the pathology of the spasmodic cholera, I have endeavoured to shew that the organ affected in this disease is the cerebellum; at this conclusion I arrived, by shewing, that no organ excepting the brain commonly considered, is capable when suffering from disease, of pourtraying symptoms of that decidedly nervous and spasmodic character, which are exhibited in this disease. 2dly, By adverting to the rapid progress of the malady, the direct depression which supervenes to the action of the heart, the difficulty of respiration from spasm of the diaphragm in the close of the disease, and the deafness which is a symptom frequently to be observed, though not very commonly remarked ; 3dly, I have pointed out some particulars of resemblance, between this disease and the tetanus and hydrophobia, which diseases will be found uniformly on dissection, to originate in disease of the cerebellum and medulla oblongata ; I have come to the conclusion that the cerebrum proper, is not the immediate organ in which the injury has obtained, from the continued and natural operation of the intellectual powers up to the moment of death ; I therefore have given it as my opinion that the cerebellum is the part affected.

An opinion of this kind, formed in the absence of any positive, or direct means of ascertaining either its truth or fallacy, would scarcely warrant any individual, in proposing a line of practice as adapted to it ; but we are at least assured, by the investigation, of one very important point, which is, that the disease is one of that class and character, which must render utterly futile and inert, those very remedies on which we are disposed to place our greatest dependance ; I allude here to the internal exhibition of calomel, and opium. In every nervous or spasmodic disease, there is uniformly found to exist a considerable repulsive power to the operation of medicines, internally administered, the effects of which are dependent on their introduction into the system through the medium of absorption ?—The fact is, that in diseases of this class, the absorbent faculty of the *stomach* is suspended, either in a greater, or less degree, dependant upon the extent of the nervous derangement ; and the consequence is, that those medicines which are required to be taken into the circulation prior to their operation, are utterly, or in the same proportion, inefficient or inert. In a simple case of common hysteria, it is well known, the large quantities of opium which are occasionally given with a very trivial effect ; but when we observe upon the more extreme cases of this description, such as tetanus and hydrophobia, we find that opium might be administered to almost any extent without producing even the slightest stupor, during the continuance of life ; this is a circumstance which creates surprize, but in examining the stomach after death, it is to be discovered, that the opium remains in its *quondam state,* in the cavity of the organ, undissolved, and unabsorbed. In tetanus, this is a circumstance of very common observation, and I have once seen the same thing occur in a case of hydrophobia, indicating that

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it is a circumstance not peculiar to one disease, but generally applicable to diseases of *this class*—The same occurrence takes place with regard to the internal exhibition of calomel, and in fact, all other medicines, in the operation of which, it is requisite, that their absorption should take place, from the surface of the stomach and intestines—Let us then examine, as there can be no doubt that the disease under consideration, viz. the Spasmodic Cholera, is one of the same genus and character, and even resembling them in some particulars, whether or not the same occurrence does obtain in the administration of those medicines, in this most fatal epidemic. In the universal exhibition of opium, either in its solid or liquid form, which has prevailed in the treatment of the Spasmodic Cholera, no individual can fail to have been struck with astonishment, at the almost perfect and absolute *inertness* of its *operation*. The quantities which are administered are exceedingly *extensive*, much larger than could be safely administered at any other period, and yet the consequences are so far from being proportionate, that although, I have used it even in the largest doses, I cannot determine that I ever observed in a decided case of Cholera, that degree of narcotic effect that could be ascribed fairly to the remedy. In the internal use of calomel during the time that the system is under the influence of this disease, the same observations will be applicable; indeed so thoroughly useless is this method of introducing mercury into the constitution now considered, in cases of tetanus and hydrophobia, that the method by friction is in every instance preferred, as the only means by which it can be accomplished. No quantity of calomel will have the slightest effect in producing salivation in these diseases, for the reason, that the stomach is incapable of acting on it, in carrying it into the circulation. I think that the internal administration of calomel, as well as that of opium, in cases of Spasmodic Cholera, to be a practice *utterly inert;* and I have not the slightest doubt that in fatal cases, on examination, these medicines would be discovered in their entire, and unaltered state, in the cavity of the stomach or small intestines—does not, I would ask, experience prove it?—A dozen patients will take these enormous doses of opium, in one or other of its forms, and not more than one shall fall into a sleep; whilst the other eleven have died, after six or eight hours, without *pourtraying* that they were, in the smallest degree, under the influence of the remedy. In this one case, I cannot suppose that the opium was the cause of it. It is I believe perfectly correct, that so soon as a patient has had a sound sleep, he might be considered as almost out of danger; but we have seen that this sleep will naturally occur, on the one hand, whilst on the other hand, no such effect will be produced by the operation of opium—I am willing to admit that in some very slight cases of Spasmodic Cholera, sleep might be procured, through the means of opium internally administered, but such a circumstance, in my opinion, would be very rare, and at the same time prove that the powers of the stomach to act on the remedy, *remaining*, the disease was no other than such an one as nature herself would have remedied. In conducting the inquiry upon this curious subject, viz. as to the power of the stomach to operate in the absorption of medicines, into the circulation, I have been guided chiefly by analogy, and by the observation of the almost entire absence of effect from narcotics, internally administered, in Spasmodic Cholera. It will naturally be inquired, when supposing that the quantities of opium and calomel taken in Cholera, might be found after death, in the cavity of the stomach, what would have been the consequence, of the presence of these medicines in that situation, had the patient recovered from the disease, and lived? The reply to this question, affords an additional proof of the accuracy of the opinion; for what can be more common than to observe the horrid state to which very numerous patients are reduced, as the consequences of the after operation of the medicines, when they have recovered from the disease itself. It is then, that the opium commences its operation; it is then, that the first symptoms of salivation make their appearance; and even death itself, I believe, has in some cases followed the excessive administration of either solid or liquified opium, from this cause, viz. the retention in the stomach of the entire quantity exhibited, and the subsequent reception

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of it into the system, as soon as the patient has recovered from the disease—In my own particular case, although I do not believe that I took it to the extent usually prescribed, I continued in a state of delirium for several days after my recovery from the disease, and this I attribute to the narcotics which I had taken at my first attack. In offering these remarks upon the use of the two remedies usually employed in Spasmodic Cholera, opium and calomel, I hope to render myself intelligible, upon this point, that the medicines themselves, I consider to be indicated by every symptom of the disease, but I conceive, that the method of administering them *internally*, as now adopted, to be objectionable, not only for the reasons which I have already assigned, but because they are liable to continual rejection from the stomach.

The difficulty which first obtains, in devising means to remedy the objection of the internal exhibition of opium or calomel is, the absence of any practised method of conveying opium into the system, through any other medium. The friction with mercurial ointment on the surface of the skin, forms at once a method of placing the system under the influence of mercury, superior, in every point of view, to its internal administration; but with regard to opium, some difficulty necessarily arises, but I think it might be obviated, by a method which I shall presently venture to propose. Having now briefly touched upon the subject of these medicines, we come next to the use of stimulants,—a class of medicines, which I should conceive to be alike destructive, and beneficial, if used at every stage of the disease. In a severe and decided case of Spasmodic Cholera, no patient can be well attended, unless the hand of the Surgeon be almost continually on his pulse; it is by so doing only, that the time can be determined, at which the use of stimulants might be advantageously employed. In the earliest stage of the Spasmodic Cholera, I have remarked, that but little change is effected in the pulse; so much so, that I have seen patients who have had the symptoms of the disease very marked, for above an hour, and the pulse, continue round, tolerably full, and not at all quickened; in fact, it does not appear, as I have before had occasion to observe, that the depression of circulation, which afterwards obtains, is preceded in the first instance by any previous excitement. This being the case, it would appear, that in the early and first stage of the disease, the use of stimulants is not only not indicated by the pulse, but is objectionable, inasmuch that, they cannot be employed to any extent at this time, without producing that secondary, or depressing effect, which, added to the depression of circulation natural to the later stage of the disease, must defeat the object with which they were employed. The time at which I think stimulants, such as brandy and other spirituous liquors, might be advantageously employed,—is, when the pulse has become small and feeble, and is continuing to do so, and when the extremities are becoming cold—at this time, it becomes requisite to make use of stimulants largely and frequently, taking care to be continually increasing the quantity, until the pulse is felt to be rising; in doing this, I do not conceive that the stimulants, themselves, should be depended on at all, as the means by which the patient is to be recovered; the other remedies should be persevered in, and the stimulants made use of, merely with the view of a temporary restoration to the circulation, to afford time for the operation of the other remedies.

This certainly is the only object which should be held in view, in making use of stimulants; it is because they have been employed in every stage of the disease, that they have been found on some occasions extremely useful, and on others, equally fatal; the same observation applies precisely to remedy of bloodletting; and it is not to be doubted that much of the indeterminateness of our practice at this moment, results from the want of a distinction being made, between the first, and last stage of the disease. That such a distinction does exist, is made evident by the little alteration which takes place on the first attack, in the strength, quickness, or fulness of the pulse, and the entire absence of it altogether, in the later stage. Although I have before spoken hesitatingly, upon the nature of the

ASST. SURG. E. CHAPMAN, GENERAL REMARKS ON THE EPIDEMIC CHOLERA, 1821.

morbid change induced in the cerebellum, the more I reflect upon the subject, the more strongly does it bear upon my mind, that it is inflammation. At first it appears to be impossible, that inflammation of any organ of such vital importance as the cerebellum, could take place, without producing excitement of the circulation to a very great degree, such as certainly does not occur in the first, or indeed in any stage of Cholera. I think however, that the absence of this excitement, even on the supposition of its being inflammation of the cerebellum, is easily explained. The injury suddenly accruing to this organ, is necessarily of that serious and extensive character, that I can most easily conceive, those organs, the functions of which are directly dependant on the cerebellum, would, rather than be influenced by excitement, suffer a direct and immediate retardation in their operations. The intimate connection subsisting between the heart and cerebellum, through the medium of its nervous communication, directly accounts for the absence of excitement, upon the principle above mentioned, viz. the severity of the injury obtained in the cerebellum, an organ immediately essential, and presiding over, the functions of the circulation. To illustrate this circumstance by one example, we will suppose a fracture of the occiput, and consequent injury of the cerebellum; this would be a severe and sudden injury; but the effect is not excitement, but on the contrary a depression of circulation, which takes place immediately after the occurrence. Such then do I conceive to be the nature of the injury inflicted by severe and rapid inflammation of the cerebellum, and am consequently of opinion, that the absence of excitement does not constitute any objection to the supposition of its being inflammation of the cerebellum.

All the reports which have hitherto been published upon the treatment of Cholera, exemplify very strongly the utility of bleeding in the earliest stage of the disease; but it is also observable, that this remedy has been had recourse to in all, even its most opposite stages. In reading the Bombay report, (excellent as it is, in illustrating the good effect of bleeding in the first stage) especially does this become apparent; patients, in the indiscriminate use of this practice, are bled, both at a time when the pulse is scarcely operated on by the disease, and also in the latter stage of the malady, when, from the almost total absence of the circulation, blood scarcely can be drawn. The effect of bleeding in the first instance, does, in almost every case, appear to be marked with a most decidedly beneficial result; and even where recovery has not been the consequence, a retardation of the last symptoms of the disease has certainly been obtained; but whilst on the one hand in the first stage of Spasmodic Cholera, bleeding appears to be thus beneficial; it is no less evident, that the use of this remedy in the latter stage, is almost uniformly attended with that result, than which no other could be expected. The limited opportunity I have had, in comparison with many others, of putting the practice of bleeding into execution, certainly does not warrant, in itself, the above observation; it has however been the result of the little experience I have had; it is to be observed by the perusal of all the reports upon the subject, and is an inference fairly to be deduced, from every analogy which bears upon it.

In the early stage of the disease, and whilst the pulse remains but little altered, or diminished in its strength, nothing certainly should forego the use of bleeding; the extent to which it should be carried must necessarily depend on the effect it produces upon the system generally, and the circulation in particular; but that no delay should obtain in its being put immediately into execution, must appear very clearly, by the knowledge, that in a short time, the pulse commences to sink and the period has then passed, where the only efficient remedy might have been employed. I have here gone so far as to denominate bleeding, the only efficient remedy; if I have not been borne out in this observation, certain it is, that no other remedy can be said to be efficient. In the treatment of this disease, I shall ever consider the other means adopted as assistant remedies at most, for in a disease of this rapid and fatal nature, it is the height of folly to suppose, that the mere extrication of a little bile from the liver, or perspiration from the surface of the body, are the indications for the cure of the malady. The one is the view with which calomel has been administered, and because it will happen that the patient passes nothing

Asst. Surg. E. Chapman, General Remarks on the Epidemic Cholera, 1821.

bearing the appearance of bile, whilst the disease continues, so has it been inferred, that the passage of bile has been the means or cause of the patients recovery, whereas it has been merely the effect. It is not that a patient recovers, because he has passed a little bile, but that bile has passed because he has recovered. The same will apply I think to the use of the vapour bath, which if it be at all useful must be so, as being an assistant to the other remedies. I should be much delighted in an extension of these observations, did it not occur to me, that I have probably already exceeded the diffidence with which I should have spoken upon the subject; I shall, however, bring the matter to a conclusion, by merely submitting to the Board the following queries.

Might not the use of opium be most advantageously employed through the medium of vapour by smoking it in substance? and might not the advantages of celerity of operation, certainty of effect, and the safety with which it might be employed, constitute a desirable contrast, to the uncertainty of its operation, and its liability to rejection from the stomach when administered internally in this disease?

Might not bleeding from the jugular vein be preferable to the arm?

Might not the use of counter-irritating, and vesicative applications be adopted to the occiput, and neighbouring parts, with more probable advantage than to the abdomen?

Might not the continued friction of the head, with mercurial ointment, be attended with advantage?

Might not the direct application of scalding water, prove the best as it is the most expeditious, method of vesication? and as it is employed occasionally in emergent cases of a different description with safety?

I have taken the liberty of suggesting the above in the form of queries, having been hitherto without any opportunity of remarking on them; and I think I cannot better bring the subject to a conclusion, than by observing, that very considerable practical information might very probably accrue to an analysis of that very particular and extraordinary matter evacuated, during the disease, from the intestinal canal.

Asst. Surg. Provan, Travancore, 5th November 1819.

On our journey from Trevandrum, to the southward, there was nothing of Cholera but what might have happened in Travancore, in any year. The climate continued very uniform till we approached Pootopandy, in the southern districts, where the high temperature, and state of the air, made us sensible of a difference. Here, the Spasmodic Cholera had broke out four days before, and was said to be more virulent than usual. In the evening we went to *Nagracoil.* The ground was parched. Sporadic cases only of Cholera, were said to exist in the place. The day following, the heat was oppressive, and a disagreeable wind blowing. In the afternoon we had a hard squall from the eastward, with torrents of rain; the night was raw, and unpleasant; and in the morning, a vapour ascended, with a steamy heat. All these changes most probably conspired, not only to excite, and give energy to the effluvia, or contagious matter of the disease, but, as all were under the influence of the sudden changes, so in a great measure, according to the degree in which they were exposed, we might expect the pathogenical causes to operate; 1st, by increasing the susceptibility of the system to be acted on by the morbid cause; and 2dly, by giving strength to the diseased actions begun. The two first sepoys attacked, had been on sentry during the night, or early in the morning, and both died.

The disease did not break out among the inhabitants, by any means, in the proportion, it did among the escort, about 50 men, and the followers, &c. possibly the change of climate which, in several respects, is somewhat different from the rest of Travancore, may have had some influence in producing this. In

Asst. Surg. Provan, Travancore. 5th November 1819.

the yellow fever, those seasoned to it in one place, are frequently rendered susceptible of being affected by it on removal to another, although the difference of climate may be very inconsiderable; and similar circumstances are stated as occurring with respect to the plague. Other minor causes, such as, water, and change of rice, &c. might have some share in predisposing to the disease, but the miasma, or contagious matter of this epidemic, must exist, in some state, in the air. Hippocrates says, æer est omnium, rex, morborumque, causa.

From many circumstances I have been disposed to think, that, changes in the atmosphere with respect to humidity, and temperature, principally produced the varieties of the disease, as to its inveterate, and contagious nature; or, its milder, more general, and more or less contagious form; and that those causes which formerly produced sporadic cases in Travancore, when combined with an epidemic constitution of the atmosphere, may have considerably added to the virulence of the disease, or, perhaps are the very sources that keep it up in the country. During the south west moonsoon, (in Travancore, the wind blows generally from the N. W.) up to the present period, it has been more confined to particular places, has been more virulent, and has shown more decided symptoms of a contagious nature; whereas during the dry season, it was more general, but much milder.

On the road from Nagracoil to this place, several of the sepoys and some of the followers were attacked with the disease; and since we came here, some more, showing that they must have brought it with them in a dormant state.

It appears that several of those who attended the sick, have been seized with the disease; and there is some reason to think, that the effluvia from the dead body, has produced it in others.

At first, I was disposed to think, those cases were more inveterate than any I had ever seen. They were certainly of a very malignant form, and some of them in a more advanced stage, than I had been led to believe, which perhaps in some measure may account for the want of success attending the treatment.

In the few cases treated at this place, at this time, where the blood could be got to flow in a stream, and a sufficient quantity obtained, the violence of the disease was subdued, and they all recovered. A peculiar case occurred in one of my servants---who had been much exposed to the rain at Nagracoil; had attended the sick; and was exposed to the rain on the road to this place. The attack was severe;---twenty four ounces of blood were taken from his arm in a full stream, and the usual dose of calomel, and laudanum given.

He was soon afterwards reported fast asleep; about two hours after this, the disease had returned with increased violence, and when I saw him the pulse could barely be felt, occasionally vibrating; veins were opened in both arms, the blood sometimes came in drops, sometimes entirely stopped; and sometimes came in a stream for a few seconds, by persevering in this way, for above an hour, it came at last in a full stream, and about sixteen ounces were taken---after a severe struggle, he recovered, and is now only suffering from an acid blister.

Asst. Surg. E. Chapman, Travancore, 8th January 1822.

From Trevandrum to *Nagracoil,* still farther to the Southward, being a distance of about 40 miles, little or no Cholera has prevailed for some time; nor even at any period, does it appear, from all that can be collected, to have raged to any considerable extent. At *Nagracoil,* however, something very peculiar indeed is to be observed; at this place, which is made a station for a small detachment of Company's troops, the Spasmodic Cholera has continued to prevail, almost incessantly, and without intermission, for a very extended period; it has decidedly assumed the form of an endemic, and without apparently extending itself to neighbouring populations, is limited, in the most circumscribed manner, to *Nagracoil* itself—it seldom rages with a great degree of virulence, but by slow, constant, and even paces, carries off a great number of its population; this ac-

Asst. Surg. E. Chapman, Travancore, 8th January 1822.

count I had heard of Nagracoil before moving in that direction, but from the extraordinary nature of the circumstance, had not given it implicit confidence: I had suspected that probably cases of severe diarrhæa, or bilious colic, had been confounded, by the reporters, with cases of the epidemic. On arriving there however, I found the reverse to be unfortunately the case, and from all inquiry, am decidedly of opinion, that the disease which here prevails, during all seasons of the year, varying only its extent, is the Spasmodic Cholera. The first day of our arrival at this place, two sepoys from a detachment, not consisting of more than sixty men, were attacked with the disease, one of whom died, and the other recovered. I had also occasion to observe several cases amongst our followers, although our stay here was but for a few days; they were all cases of the most malignant form of Cholera, and precisely such as that from which the inhabitants of Nagracoil are incessantly sustaining a gradual diminution of their numbers. Nagracoil is situated at a distance of not more than eight miles from the sea, and as regards its local dependencies, there certainly exists no very apparent cause, for this peculiarity of perpetual assailment from the Spasmodic Cholera. The country immediately in the neighbourhood is flat, and it accordingly happens that much water is collected during the rains, in the low situations; it is the peculiarity of this country, comprised in the Nunganaud district, that the rains are exceedingly irregular, and uneven in their violence; it not uncommonly happens, that after a considerable fall of rain, it continues perfectly dry, scarcely with the intervention of a single shower, for an entire year. The result of this must necessarily be a putrescent state of the quantity of water then remaining, and which at the period of my moving through Nagracoil, was observably the case. At this time, it had occurred, that no rain had fallen during the period abovementioned, and the water was accordingly in that state, which might be expected from such a circumstance. I am not prepared to assert, that this fact alone, is sufficient to account for the continued prevalence of Cholera at this place, but whatever share it may have in its production, certain it is, that the poverty and the wretched state of the population, is in every respect calculated to propagate and support the disease, when once developed. A very curious circumstance as connected with the probable remote cause of the Epidemic Cholera, occurred whilst we remained at Cape Comorin. Although little Cholera was at this time prevailing among any other class of people, it became remarkable that the grass cutters of the escort were frequently attacked, and *that* usually in the evening, after having gone to a tank to cleanse their grass. On one occasion, two grass cutters had been together at this tank, at the same time; they were both attacked on the same night, at the same hour, and died on the following morning—out of eighteen grass cutters, we lost five, besides others being affected, in the space of three weeks; it was presumed, that the circumstance was in some measure connected with the putridity of the water contained in the tank, and which certainly bore every appearance favorable to such an idea, being scarcely passable from the nauseous effluvium which it evolved. The impression made upon the minds of these individuals themselves, was corroborative of this opinion; the tank was spontaneously deserted by them, and no case of Cholera occurred during a subsequent period of nearly nine weeks stay at the same place. I will not in this place decidedly aver that the effluvium from this body of water, was productive of the disease, Cholera, although such an inference would be consistent with the fairest principles of deduction, because I think it possible that it may be only so far connected with it, as to have operated as the debilitating, or predisposing cause of the affection.

Asst Surg. Ewart, Camp Ceded Districts, January 1820.

Cholera forms the most prominent feature of the Register for last month, and the only disease by which the Corps has lost any men, except one patient, an old case of ulcer, who died on the eighth day of the month. Those marked in the column of deaths, under the head of other diseases, being patients in hospital originally labouring under the diseases to which their names are attached; they are put down separately at the end of the register with a distinctive letter to each name, and a corresponding one to their places in the general list. The cases of

Asst Surg. Ewart, Camp. Ceded Districts, January 1820.

fever lately admitted, have been generally slight, and easily subdued, by opening the bowels freely at the commencement; the old cases are obstinate, and a number of them accompanied with affection of the spleen; diarrhæa has been frequent, but not severe.

The species of Cholera which we have suffered so much from, has been very seldom accompanied by spasm, or indeed any pain—the patient after perhaps one or two watery, whitish stools, and sometimes vomiting, became quite cold, the pulse imperceptible, and the strength sunk very rapidly; indeed, in most of the cases that terminated fatally, there was from the first attack, an indescribably anxious contracted expression of countenance, and they seemed to wish for nothing so much as to be allowed to be quiet and undisturbed.

The practice I followed with all, was immediate large and frequently repeated doses of calomel and laudanum, with small quantities of brandy and water, warm pepperwater; and in some cases, the mist. camphoræ was given frequently. These with warm fomentations, bottles of hot water to the feet and stomach, and mustard poultices to the same parts, were the principal means tried, but I am sorry to say with little success. I have very lately arrived on the Establishment, and had never any opportunity of seeing the disease with Natives before, though I had for some time a charge in the General Hospital at Calcutta, where we had frequently Europeans with Cholera, and where pretty much the same practice as detailed above was followed, but with a much more favorable result.

Bleeding was tried in four cases, but we could only procure blood in any quantity, from one man, who recovered; but the case was not a very severe one from the beginning. The vapour bath, such as we could manage on a march, was once tried, but without any good effect. In those who have recovered, after the first attack was over, the natural heat of the skin and strength of the pulse returned, my principal attention has been directed to the procuring of free and natural stools by purgatives, varied according to circumstances.

With regard to the cause of the disease following the Battalion so constantly since leaving Secundrabad, I cannot form the most distant conjecture; we have not heard of its existence in any of the villages through which we have passed.

Asst. Surg. B. Williams, Camp Secunderabad, 20th June 1820.

Our detachment originally consisted of more than 350 Europeans, about one half old soldiers from King's Regiments, the other half for the most part young men, late arrivals in the country. We left the Mount on the 14th of April, and were detained in Camp, between that and Poonamallee, till the 27th; it is almost unnecessary to remark, that during that time, every man that had money took every opportunity of getting drunk. On the 9th and 10th May, we suffered from a storm, accompanied with heavy rain; all the line tents, with the exception of one, were blown down, and our men exposed for above 24 hours to the whole of it. We continued however particularly healthy, not having lost a man or having one seriously ill, till we met a Battalion of the 8th, on the 18th of May near Cuddapah; they were suffering from Cholera; our camp was pitched on the spot they had left; it was the lowest ground near the town, and there were, when we came up, several bodies unburied. We halted on this ground 3 days; on the 19th one man was attacked, and died on the 20th. On the 20th, four men were attacked, 2 of whom died, and 2 recovered. On the 21st, six men taken ill with the disease, 3 died, and 3 recovered. On the 22d six cases, 3 recovered, and 3 died. On the 23d none. On the 24th one case, recovered. On the 25th four cases, 3 of which died. On the 26th four cases, one only recovered. On the 27th five cases, 4 of which recovered. On the 28th three cases, all recovered. On the 29th one case, recovered. On the 30th one case, recovered. On the 31st one case, recovered. 1st June, three cases, 2 recovered, 1 died. On the 2d two

Asst Surg. B. Williams, Camp Secunderabad, 27th June 1820.

cases, one died, one recovered. On the 3d one case, recovered. On the 8th one case, died. On the 10th two cases. died. 11th one case, died; since which, we have not had a case. The total number is, 47 attacked—22 died, and 25 recovered; we have lost during the march 2 other men, one of hepatitis, the other of dysenteria.

The symptoms were, as they generally are with Europeans; viz. if they applied immediately, or very soon after being attacked, they had violent and frequent purging of a whitish fluid, with an inclination to vomit, and sometimes bringing up a small quantity of the same coloured water. Pulse at the wrist regular as to time, but soft, and stopped on the least pressure. Skin *warmer* than natural, anxiety of countenance, thirst, though the tongue is generally clean and moist, and occasional spasms of the toes and fingers. If the men delayed coming for 2, 3, or more hours, which they often did, trying burnt arrack and other things in their own tents, the symptoms of course were more severe; in this stage vomiting was seldom present; pulse small and quick, if it was to be felt at all; skin cold and wet; eyes sunk and countenance entirely changed; thirst very great; spasms of the muscles of the thighs, arms and stomach; a burning sensation at the epigastrium, and sometimes a ringing in the ears and deafness.

With respect to the treatment, my first attempt was always to procure blood from the arm, or temporal artery; if that succeeded, which it almost always did in the first stage, the patient invariably recovered; the blood being at first nearly of a black colour, of the consistence of oil, and becoming at last perfectly natural; after bleeding, I gave hyd. sub. ℈i. in powder, washing it down with a draught composed of tinct. opi. gtts. 20. aquæ. ℥ss. m. the patient often slept or dozed for a short time after this, and in that case felt greatly relieved; the stools became less frequent; in about 2 hours, if the pulse continued soft, the calomel was repeated without the opium; if the pulse was hurried or small, with, the opium; in 5 or 6 hours, the calomel was again given, depending on the pulse, as mentioned before, whether with, or without the opium; the stools about this time generally changed to a black colour, then green, afterwards mixed, and at last natural. As long as the stools continued black or green, and the gums not affected, the mercury was continued in large doses at night. When the stools were natural, or the gums affected, the calomel was stopped, and they seldom required any more medicine. Some of them were purged many days afterwards, but it left them gradually as they recovered their strength. The above is the general history of cases when the men were reported to me very soon after the attack, and when I could succeed in bleeding them till the blood changed to a natural colour.

With respect to those in the second stage, the number recovered, compared with those who died, is very small. A few ounces of black blood could occasionally be taken away; the pulse then stopped; the calomel was given, as to the rest, and if the spasms were very violent, the opium in larger doses; it sometimes, but very rarely happened, that in 3 or 4 hours, the pulse was again to be felt, and the skin had become dry; (in this case I once attempted to open a vein; after getting 2 or 3 ℥ of blood, the pulse stopt and was never afterwards to be felt;) the calomel was repeated more frequently here, than in the first cases; and if the pulse was soft, weak only, but not hurried, I gave frequent draughts of brandy and water, (about equal parts of each,) which appeared greatly to assist nature in producing re-action; however in almost every case of this stage, the patient became more exhausted; the spasms more severe, and attacking those muscles more necessary for the preservation of life; great difficulty of breathing came on and he died convulsed; this generally happened from the 8th, to the 14th, hour after being attacked—the spirituous vapour bath was used with a view of promoting a determination to the skin, in cases of the 2d kind.—I believe it never did any good.—Hot water was applied as a blister, by means of a cloth to the epigastrium, to relieve the burning sensation; it appeared to be of as much use as the vapour bath. Europeans were employed to rub the extremities when attacked with spasms; this assisted greatly in giving temporary relief.

Asst. Surg. W. Fasken, M. D. Bangalole, August, 1820.

Total admitted, 138; died 74; recovered 64.

Although, in the following observations, I must chiefly confine myself to the simple narration of such facts as have come within my own knowledge, during this march; yet it may be excusable if, in the course of these remarks, I should at any time introduce some speculative opinions concerning the production of this most intractable complaint, well aware however, that what may be said on this mysterious subject may be contradicted by the experience of others.

On the 9th June, when the weather was close, but I believe not unusually hot, the corps left the Presidency. But after proceeding about three marches from thence, the hot westerly winds commenced, and continued to encrease in strength as we advanced towards the Ghauts. The evenings were commonly cooled by a squally shower, which was afterwards followed by a lull that continued during the remainder of the night. A little before sun-rise, the wind sprung up again; and, in consequence of the rain that had fallen the evening before, the mornings were pleasant, and had an agreeable refreshing coolness; but as day advanced, the hot, high westerly winds again commenced, and they were generally remarked as having a peculiar sharp, and penetrating effect on the body, and a debilitating or relaxing one on the constitution in general. They put me much in mind of hot wind blowing through a half wetted tatt. After ascending the pass and entering the Mysore Division, we still experienced the same kind of weather, but accompanied with a great reduction of temperature, in so much, that the evenings and mornings required a very considerable augmentation of clothing. To this favourable state of the weather, as well as marching early in the mornings, and choosing dry, open and elevated situations for the Camp, was attributed the absence of Cholera; but a short time soon shewed how erroneous such a supposition was, and how ineffectual all these precautions proved. At Colar on the 29th June, the pestilence first made its appearance, in a very aggravated form, without any apparent change in the atmosphere, and certainly without any probability of contagion, as no cases of it had been heard of in any of the villages through which we passed The town of Colar is overhung on the north-west by large and lofty hills, which were topped, morning and evening, with thick foggy clouds. It is open to the eastward, but closely surrounded by large tanks, rice fields, and such a variety of trees that a regiment can scarcely find room enough to encamp: the air was chilly and damp. This situation was considered every way unfavourable for halting the usual period; and the occurrence of Cholera was a farther inducement to move on next day to the other ground, which afforded a more favourable accommodation. Here orders were received to halt the corps on its arrival at Ooscottah, which was only about 14 miles distant; but as the number of sick far exceeded the means of transport, we could only proceed by short marches. Although each dooly carried two cases, yet they had to return a second time; and in this state of affairs, most of the patients fell victims to the disease, and many, who were put into the doolies alive, were taken out dead.

Before entering on the subject of Cholera more particularly, it may not be amiss to take a short retrospective view of the general habits and manner of living, of sepoys, chiefly with a view of ascertaining how far their native habits and prejudices predispose them to this fatal complaint. Sepoys are generally allowed to be extravagant in their family establishment, and improvident of their means of supporting it; for these reasons, when placed in situations where they cannot obtain credit, they are obliged to live on the coarsest fares---And this was truly the case with us. They had not advanced more than 10 marches from Madras, when there was a general want of money among them; and on being questioned as to the reason of it, they replied that they had advanced so much for the transport of their families, and paid so much for debts contracted at the former station, that they literally had nothing now to live upon. As far as their wants could be relieved in camp, it was done; but of course the demands of such a number far exceeded the disposable funds.

Asst. Surg. W. Fasken, M. D. Bangalore, August, 1820.

The next thing that requires consideration, is their want of proper protection from the cold, damp, and rainy nights. And although Government amply provide for that purpose, yet there are comparatively few who avail themselves of the public accommodation afforded them, they choosing rather to shelter themselves under walls and trees, or at most only protected by a thin cloth erected in shape of a tent, than take advantage of those supplied for their use by the public. This is at least the situation of those with families, and few there are without them;—and they were by far the greatest sufferers from Cholera; in so much so, that I was at one time inclined to believe that none but such as lived in these exposed and miserable hovels were affected with the disease; and indeed I am not sure, even now, that this supposition is not correct, for the majority were evidently of that class. I mentioned in former reports that none but sepoys and those connected with them, were attacked with the disease; and such, with very few exceptions, continued to be the case during the whole prevalence of the complaint. This is a fact that requires some consideration, and which I am much inclined to attribute to the circumstances just mentioned.

During the whole march, prior to the breaking out of Cholera, fevers and bowel complaints were the most prevalent diseases; but as Cholera prevailed they disappeared, and vice versa. It was observed during the prevalence of these complaints, which the sepoys often wished to call Cholera, that, in every case, I believe without exception, the person had been living for a longer, or shorter period on different coarse, and cheap kinds of grain, not generally used as articles of food by the natives; to this, with some shew of good reason, was attributed their several complaints, and when cautioned and warned against using such pernicious substances, the general reply was that they had no money to purchase better, and a large family to support. It is not unreasonable therefore to conclude from these facts, that not only were these complaints caused by such a mode of living, but also that it laid the foundation for more serious affections; and I think the great number of teres worms that have been voided during the prevalence of Cholera, will sufficiently prove the use of unwholesome food, and debility of the digestive organs.

If it has been sufficiently shown that the sepoys and their families were badly fed, and ill protected from the cold, damp and raw air of the night, there will be less difficulty in accounting for the occurrence of cholera among them in an epidemic form; and the fact is incontrovertible, that none but them (with the few exceptions already mentioned) were attacked with the disease. It cannot be supposed that it was communicated by contagion, for none existed in the villages; and if it arose from any pernicious quality in the atmosphere it would have affected the camp more universally. None of the attendants on the sick caught it, and nothing occurred at any time to create even a supposition of its being of an infectious nature. The majority of cases, by far, were admitted early in the morning, some towards evening, and a few in the middle of the night; seldom or never any, in the middle of the day. This fact will also support what has already been mentioned relative to the occasional causes.

Be this as it may; I shall now proceed to detail the principal symptoms of the disease, and as they are well known it will not be necessary to be very particular. Purging and vomiting are the first that occur, but very frequently the latter was either altogether wanting in the first instance, or only amounted to nausea and retching. The fluid evacuated whether by vomiting or purging was exactly the same, and formed a very striking character of the disease; it was limpid and colourless, and the sepoys gave it the name of "blue water," which does not ill express it. This blue water was considered a most unequivocal mark of the disease: two motions of this kind, and once vomiting, very frequently produced fainting, which was soon followed by a great diminution of the heat and pulse, a collapse of the features, and a remarkable appearance of sinking of the eyes. Spasm was not by any means a constant symptom, but when it was present it ag-

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gravated the patients sufferings very much. To these symptoms, succeeded cold clammy sweats, short and difficult respiration, with much restlessness; shrivelling of the integuments of the hands, and feet, and paleness of the nails. Frequently the eyes appeared blood-shot at a very early period, and their natural secretion became much increased; but the brain was never affected, although the external senses were blunted. The urine very frequently was suppressed, or voided in small quantities, and with pain; the tongue soon became furred, and generally dry; the patients had an incessant desire for cold water, and sometimes a craving for food, but it was not found advisable to indulge them in these respects. If the heat and circulation could not be restored in a short time, the body contracted an earthy smell, and the stools a remarkable fetor; the breathing became more oppressed, and anxious, and the patient died as if from suffocation, or submersion.

From these symptoms we evidently see a disease commencing in the stomach and bowels, quickly affecting the most vital organs, deranging the whole nervous system, and rapidly proceeding to a fatal termination. The nerves cease to give energy to the body, and the arteries to perform their functions; and the heart at length seems to be oppressed and loaded, with such an influx of unoxyginated blood, that no means can restore the balance of circulation. The integuments collapse, and shrink, and a morbid watery exudation over the whole surface, ensues; and from the entire absence of natural stools, it is not improbable but that, from similar causes, the same takes place in the intestinal tube.

I have never been able to obtain permission to open any of the fatal cases, and therefore for want of such valuable support, these opinions must be very inconclusive.

With regard to the treatment pursued, it varied much according to the state of symptoms at the time, and the period of illness. It was stated in a former report during the march, that every thing recommended by the experienced had been tried, but that nothing claimed any decided advantage, or superiority over another;—some died, and some recovered, under each, and every method of cure. It seems to be tacitly admitted to be a disease of the greatest debility, and consequently every means is directed to rouse the sinking powers of life, and remove the irregular and morbid train of action in the system; indeed no one can look upon the disease, without seeing what is wanting. To answer these intentions, strong stimulants, such as brandy, or arrack, either pure or diluted, together with calomel, and opium, were employed. The spirituous liquors were given, neither in limited quantity, nor at any certain period, but just as the symptoms required; and the calomel and opium were made into pills, in the proportion of one grain of the latter, to three of the former—two or three of which, generally constituted the first dose, which were afterwards repeated as the circumstances of the case required; camphor was very frequently added to the above pills, particularly when hiccup came on; and then, together with the application of warmth, and the use of friction constituted the chief means of cure. The urgency of the symptoms, and the rapidity of the disease, indicated a use of such means as would have the quickest effect; and for this reason, medicines in a liquid form would seem to be preferable; but I seldom found that they would remain on the stomach, and when rejected, all the symptoms were aggravated; for these reasons they were not much persisted in, and whatever contained the greatest power in the smallest bulk seemed to answer better.

There is another stage of the disease that requires considerable care and attention—I mean when the general collapse has been removed, and the reaction commences. The returning blood seems to fall chiefly on the abdominal viscera; and to prevent congestion and the occurrence of a new disease in these organs, it has sometimes been necessary to have recourse to the lancet, and with much advantage. Minor consequences of the reaction have frequently been observed in patients becoming affected with slight hepatic attacks or dysenteries; and I had one patient who died of pneumonia supervening upon Cholera. During the time that Mr. Davies was in charge of this corps at Madras, a boy had been

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attacked with Cholera from which he recovered; and at the time that I got charge, I found this patient still in hospital, with a large abscess forming under the false ribs of the right side. It was opened, and a large quantity of matter discharged, but as he was transferred to the General Hospital on our leaving the Presidency, I do not know what has been the issue of the case. However, this may be adduced as another instance of what has been just mentioned, relative to the consequences of the re-action.

Besides that kind of Cholera abovementioned, I every now and then met with another variety, or modification of it. The characteristic symptoms of which chiefly were, that the natural heat of the body suffered but little diminution, and the morbid perspirations were much less copious; but the other symptoms were similar, and it proved equally, though not so rapidly fatal. These were thought to be very fair cases for bleeding, and I think it was frequently done with advantage, when had recourse to at an early period.

The sepoys had a great abhorrence to venesection, and it was with great reluctance that they submitted to the operation; but the first case in which it was practised chanced to recover, and he held it up to the rest as a valuable remedy. It seems somewhat paradoxical to have recourse to so powerful a sedative as blood letting, and such active stimulants as brandy, &c. at the same time; and to deplete the system at the very time we wish to give it more vigor. But I have already hinted at the similarity between Cholera, and submersion, or rather persons in a state of recovery from submersion, and in many respects there seems to be a great affinity of symptoms. In both, the breathing is oppressed and anxious, the extremities cold, the circulation restricted, the thoracic viscera oppressed with unoxyginated blood, and the nervous energy suspended. Therefore to bleed in order to relieve the local congestion, and diminish the bulk of the circulating fluid; and to give stimulants to excite and renew the suspended action, is not so very inconsistent practice. But unfortunately in Cholera cases, very little blood can be withdrawn, and what comes away has a dark grumous appearance, every way dissimilar to inflammatory blood. When venesection was performed on patients in a sitting posture, it was found that nausea and vomiting were apt to come on, by which the blood ceased to flow, and all the symptoms were aggravated; consequently the recumbent posture was thought to be preferable. Indeed absolute rest, and constant confinement to a horizontal position seemed to be so necessary, that I never allowed a patient to sit up while visiting him, at least until he had greatly recovered.

Previous to this I had not thoroughly understood Mr. Dalton's method of using the vapor bath, and consequently have not particularly noticed it here, but it seems to be well calculated to assist the operation of blood-letting, and to relieve the venous congestion in the first stage, and thus bring on the arterial reaction.

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Cholera.---No disease could be more incorrectly designated than this; for it has but little relation to real cholera; and in every instance that has come under my observation, it is totally wanting in that which gives the character of the disease, viz. an overflow of bile.

Although it is by no means a prevalent complaint here, yet its importance renders it at all times worthy of consideration: and the accompanying case exhibits an instance of its arising solely from the irritation of worms. But as this differs in some respects from others arising from less evident causes, I shall not confine the following remarks to it alone, but rather extend them to a general view of the disease as it occurs in natives, and in them only.

Although, it is not entirely confined to troops on march, yet it is so constant an attendant on that and similar fatigue duties, that it may peculiarly be said to belong to that part of the service;---instances of its occurrence under other

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circumstances and situations being so very rare, as only to form exceptions to the general rule. It rarely attacks those who live well, and are careful in guarding against the vicissitudes of heat and cold; but these are circumstances which natives have but little notion of. On a march, they are seldom attacked during the heat of the day; but most frequently during the morning or evening cold, when the rest has been short and unrefreshing, and the system in an inactive and torpid state, and little able to resist the impression of cold. Officers, in such cases, besides other means, find much benefit in warm tea or coffee. In the cold mornings here, it frequently happens, that sepoys are suddenly taken ill, and returned from parade with fainting, vomiting and purging of the nature of that of cholera; but after remaining warm and quiet in hospital, and taking sometimes a dose of laudanum, and always a purgative, they are able to return to their duty in a few hours. In some instances the abdomen is wonderfully retracted towards the spine, and seems as if it contained no bowels, but it soon reassumes its natural fulness, after the operation of a purgative. The facility with which the system is affected by cold is rendered very conspicuous by the frequency with which sepoys are obliged to make water in a cold morning on parade; and by the frequency with which they fall out, even in warmer mornings, from mere faintness.

From all the circumstances connected with this disease, and which have at different times been reported, it would seem more difficult to account for cholera ever being absent, than for its always being present; that is, provided the climate, the nature of the service, and habits of the natives are the same now, as they ever have been. There is no evidence of its being produced by any specific contagion, neither is such a principle necessary to account for the phenomena of the disease; nor is it likely that a congestive disease should in itself be contagious.

I have said in a former report that cholera exhibits the most complete example of venous congestion of any disease whatever; and upon this principle all the symptoms may be explained. The suddenness of the attack, and the circumstances under which it occurs, the rapid failure of the pulse, the corrugated state of the skin, and collapse of the features, all shew that the blood suddenly leaves the surface. The redness of the eyes, which is not inflammation, and the comatose state of the patient, show that the brain is engorged; the laborious respiration, that the heart and lungs are overloaded; and the suppression of bile and natural evacuations, that the liver and other organs are oppressed. The vomiting, fainting, watery stools, suppression of urine, and profuse exudation on the surface are all in evidence of congestion, and loss of nervous energy.

My own experience does not furnish any thing of material consequence respecting the cure. Blood letting would seem to be highly indicated; but the congestion takes place so rapidly, and so extensively, that no blood will flow, in any useful quantity, and what does come away, more resembles gore than natural blood. After the reaction is fairly established, venesection is not unfrequently necessary to prevent inflammation, and disorganization of the affected organs. In the accompanying case it was tried several times, when the pulse was perceptible, but without effect; for the pulse was soon lost again after the arm was exposed. Absolute rest in a recumbent position seems to be a "sine qua non" in the cure, together with as great a supply of warmth as possible; and, by these means alone, the pulse and circulation will sometimes return; but every attempt of patients to raise or expose themselves is followed by a repetition of the symptoms. Calomel and opium seem to be very useful in the first instance; and an active purgative, as soon as the stomach will retain it, has always been followed by copious stools, and much relief. As stimulating liquids taken into the stomach quickly diffuse their effects over the whole body, they would seem to promise well; but they are seldom retained. Frictions are inconvenient, in as much as part of the body must be exposed to the open air, which affects the skin very easily.

Asst. Surg. J. Barton, Camp Secunderabad, 11th Jan. 1821.

For some days the sepoys had been living upon a coarse kind of dhall, newly cut, and housed, to which I attribute the appearance of a common bilious diarrhæa, to which a great number of them were subject, but which went off without having recourse to medicine.

At Ekerla, on the 9th December, the battalion was encamped on low ground, close to the village, and at the bottom of some surrounding rising grounds. The ground was confined, with a stagnant nullah close to the lines; the ground however was dry—and of the description called "cotton soil." Here the disease first made its appearance. The symptoms were, most copious ejections of a white fluid like conjee water, both by vomiting and purging; spasms, cold clammy sweets, great prostration of strengh with restlessness, difficulty of breathing and a burning sensation at the pit of the stomach, and in a few cases, a strong throbbing in the course of the linea alba, and a most inactive state of the vascular system, no pulsation being felt so high up as the axilla. In the commencement of the disease, recourse was had to calomel, of which ten grains were given, and washed down by the antispasmodic mixture directed by the Medical Board, with synapisms applied to the hands, soles of the feet, and inside of the thighs. Frictions and fomentations with warm water and arrack, and small quantities of brandy and warm water to allay the thirst. These means generally allayed the evacuations and spasms, but the other unfavorable symptoms continued, and of 25 patients who were first admitted, 11 died.

I however continued the use of the same remedies, but after a fair trial found it to be inefficacious.—These patients were generally relieved from the severity of the spasms, and the frequency and copiousness of the purging lessened; but great languor and debility continued, and death appeared to me to be caused by complete exhaustion.

Having heard a report of the use of tartris antimonii in this disease, by Mr. M'Dowell, whilst at Jaulnah; after seeing the failure of the other medicines, tho' given in large and repeated doses, according to the urgency of the symptoms, I determined to try its effects, combining it with calomel. A pill consisting of

Calomel grs. v.
Tart. antimon. grs. ii. m.

was given on admission, and when spasms were present a pill of opium of 1 or 2 grains was given in preference to tinct. opii, which latter was frequently rejected by the stomach. The antispasmodic mixture caused frequently a burning sensation and was seldom retained, I accordingly omitted the use of it.

The first dose of emetic tartar operated as an emetic, almost in all cases, and certainly had an effect on the stomach. Instead of the straining, retchings, and ejections of white watery fluid, which prevailed, without any discharge of the *ingesta*, the tartar emetic seemed to cause a natural convulsive vomiting; I mean, that a convulsive action of the diaphragm, abdominal muscles, and stomach was excited, by which natural vomiting is excited. The substance vomited consisted generally of *rice*, and other ingesta, in a state little altered, or acted on by the stomach. Fifteen or twenty minutes after the first dose had acted as an emetic, it was repeated, and the patients directed to be kept closely covered, and as warm as possible, to enable the antimonial preparation to act as a diaphoretic; and when the men were careful in keeping themselves covered, the second dose very rarely acted as an emetic. When retained, and exciting only nausea, its favorable effects shewed themselves, by a slight increase of heat, first upon the body and shoulders, and gradually and slowly extending down the arm. A rising of the countenance, and a gentle perspiration which had lost the peculiar clamminess and coldness, so remarkable in the epidemic, followed, and encouraged, by the medicine being repeated every hour or 2 hours, as the course of the symptoms were favorable or otherwise. The vascular system slowly assumed its natural tone, and the pulse at the wrist could be felt distinctly, though weak and soft. With the rising of the

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pulse, and the perspiration, the spasms abated, and the purging was relieved. The tartris antimonii acted in very few cases as an emetic, after the stomach had been cleared by the operation of the first dose. From the well known sympathy between the stomach and skin my object was to have the second dose retained to excite nausea, and thereby a relaxation of the spasmodic state of the extreme vessels. When this could be accomplished, the disease certainly assumed a favorable turn; on the contrary when no nausea, or perspiration was excited, the unfavorable symptoms continued. Particular orders were given to abstain from drinking, and when the thirst was urgent, a desert spoonful of a solution of sulph. sodæ or magnesiæ in the proportion of ʒi. to an ounce of water, was given, which the men *preferred* to cold water and conjee, and was generally retained.

The sequælæ of the disease, debility and a very disordered state of the bowels, were relieved by cinchona, and laxatives of pulv. rhæi, and calomel, in small doses, which in a few days enabled the patients to return to their duties; and the proportions of deaths were decidedly lessened since having recourse to the tartris antimonii.

In the few cases in which blood letting was tried, the peculiar throbbing in the linea alba, with pain on pressure, were the reasons which induced me to have recourse to that depletion. The severity of the symptoms were certainly much abated by it; but the constitution of the natives, made me have recourse to it with great caution; and the death of these men, seemingly from exhaustion, and without any recurrence of bad symptoms, has deterred me from persevering in it, particularly as the men themselves have a great dread of its use. In none of the cases more than 6 or 8 ounces could be drawn: the blood was of a thick, heavy, blackish colour and consistence, and generally *fell* very slowly from the arm.

Asst. Surg. J. Barton, Bellary, 20th March 1821.

When the "Epidemic Cholera," first made its appearance in the 1st Battalion 1st Regiment N. I. that practice was followed, and those means had recourse to, which had been found to be most efficacious in former instances; submurias hydrargyri, tinctura opii, æther, and camphor were given in large, and repeated doses. In many instances these afforded relief, and effected a cure; but in a very large proportion, they did not appear to me to answer the expectations which had been formed from a knowledge of their success in former instances of the prevalence of the "Epidemic Cholera."—Where there was great thirst, much anxiety, burning sensation of the præcordia, and pressure on the seat of the stomach causing and increasing pain, together with a florid eye, I found these means disadvantageous; each dose seemed to aggravate the severity of symptoms; the patients complained more of the burning sensation and thirst; they appeared to be in much agony, beating their stomach and chest, and rolling about incessantly after every dose; and the irritability of the stomach appeared to be at least kept up, if not excited, by the use of these medicines. Their only good effect was allaying, and moderating the violence of spasmodic action, and thereby giving a temporary respite, and an opportunity to the system, and vis vitæ, to exert its powers; of the number first admitted, amounting to 25, who were thus treated, 11 cases proved fatal. The practice was continued, till between 35 and 40 admissions proved its inefficacy. The disease continued to rage without the least abatement, and on the 19th only, did it promise to assume a milder form, but only for a few hours; on the same day, after what might be called a remission, the number of cases amounted to as many as had occurred at any former period, and the severity of the disease continued, without abatement in its violence, until the corps reached Secundrabad---After having given the remedies first had recourse to, a fair trial, which proved to me their inadequacy in the present attack of the disease, I could not conceive myself warranted in further pursuing an inactive treatment. Reflecting also, upon the number of cases, when, on dissection, acute inflammations of the stomach had been found a concomitant of this disease,

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and conceiving that inflammation might be present, as was indicated by the great thirst, burning sensation and *pain* on *pressure* of the prœcordia, and turgid eyes; the impropriety of further continuing the use of stimulants, which were calculated to keep up and excite inflammatory action, presented itself forcibly on my view; and determined me no longer to pursue a method of practice which had so highly failed. I cannot positively say that inflammation existed, in those cases where I suspected it, because the aversion the natives have to opening the bodies of their friends or relatives, prevented me from ascertaining the fact by dissection.

At an early and severe period of the prevalence of the disease, when neither the number of cases or the severity of the symptoms indicated a milder form; the tartrite of antimony was had recourse to; I must confess it was with diffidence, and some degree of anxiety and fear I had recourse to a medicine, known to act as a powerful emetic, and in a disease where constant vomiting is a prominent symptom; accordingly I used it in the first two or three instances in doses of one grain, with five grains of calomel; its effects emboldened me, and I had it given in doses of two and three grains. One of the first effects of the tartrite of antimony, and what I look on as an important one, was in almost all cases bringing off the ingesta, which had been retained, though the vomiting of conjee-like water had been previously urgent and frequent; ten or fifteen minutes after the ingesta were thrown up, after waiting to see if the stomach was emptied of them, a second dose was administered. Every means of keeping the patients well covered now were strictly adhered to, to cause the tartrite of antimony to act on the skin. The dose was repeated every hour, or two hours, according to the urgency of the case. When the patients could be kept steadily covered, the first favourable symptoms were a slight degree of heat about the shoulders, which gradually and slowly extended downwards; the countenance lost its collapsed and ghastly look, and the pulse began to be indistinctly felt, and the cold clammy sweats wore off.

When the patients complained of thirst, which in a great many cases was incessant, a weak solution of sulphas sodæ, or sulphas magnisæ was given, generally a spoonful at a time; this afforded them much relief, and the patients expressed their feelings both in their looks and actions; even in the cases where the burning heat of the stomach was present, the saline solution was given with relief; when cautiously given in small doses it scarcely ever cause vomiting; in some few cases, I gave it in larger quantities at the continued and urgent intreaties of the patients; but it always excited vomiting when given in an over-dose, or too frequently administered.

I am so convinced of the utility of tartris antimonii in this prevailing disease, that, I would give it a preference in my own case, were I unfortunate enough to be attacked by it. After giving it a fair trial, I informed the officers of the corps of its efficacy, and several of them used it among their servants and followers, and agreed with me in its efficacy and superiority at that time, over stimulants. From what I have said of suspected inflammation in the stomach, it may be asked why I had not recourse to bleeding more frequently. The few cases wherein that depletion was used all terminated fatally, though had recourse to when it promised to be successful, being used at an early period of attack. Lieutenant Campoell was a very powerful man, of a plethoric habit, but who led a very regular life, on whom the effects of blood-letting were tried at a tolerably early period, when the vascular system did not appear materially affected. The blood was drawn from a large orifice, and flowed in a full stream until it changed from a dark to a florid colour; when upwards of 10 ounces were drawn deliquium animi came on---yet his case terminated fatally.

With respect to the doctrine of contagion I must speak very indefinitely; no circumstances have caused me to imagine the disease to depend upon, or in any case, to be caused by, animal contagion. I do not think that a person in

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good health can receive the disease from the contact, or inhaling the breath, or effluvia, of one labouring under it. I have, indeed, known it prevail through a family, particularly one sepoy's family consisting of 8 people, but, they appeared particularly susceptible of the disease from making use of very poor diet, and six of them died ; myself and dressers passed the greater part of our time in the hospital tents, and indeed slept in them at night, and though I was at the time very unwell, with my bowels much disordered, I never had any symptom of the disease. I cannot say that it depends upon atmospheric influence, because the whole tract of country through which the Battalion marched, was reported by the villagers to have been perfectly free from it ; and as I had marched through the same tract with the 1st Battalion 19th Regiment 3 months before, without meeting with any cases, there is every reason to believe the reports of the villagers. At Hingolee a brigade of Nizam's regular infantry were stationed, and I learnt from the European Officers, that no cases of the epidemic had occurred during 3 months previous. However at this station, one case occurred in the battalion, another occurred at Nandair, which city was also free from the disease, and at Ekarla, where it appeared in the severe form, the few people in the village did not even know of such a disease.

I learnt after the arrival of the battalion at Hydrabad, that the route from Nagpore, had not been visited by the disease, nor did any villages suffer by it, whilst the battalion was in their neighbourhood—a company of the 2d Battalion 13th Regiment Native Infantry, encamped at Lingumpully, a large village on the junction of the Jaulnah and Nagpoor roads, lost 2 or 3 men after the 1st Battalion 1st Regiment had passed it ; but I understood from the officer commanding the detachment, that cases of the disease had appeared there, previous to the arrival of the 1st Battalion 1st Regiment ; in short from my previous knowledge of the tract of country from Secundrabad to Nandair, and from the reports of the inhabitants, the disease had not been known for upwards of three months ; none of the villages were affected by it, by the vicinity of the 1st Battalion 1st Regiment, and none of them suffered after that Battalion had passed, with the exception of Lingumpully.

There was nothing particular in the state of the weather ; being such as was peculiar to the degrees of latitude through which we passed. There was little or no rain ; the nights were cold with (some times) heavy dews, particularly at Pedderpoor, as were the mornings till about 8 o'clock ; the heat at noon was by no means oppressive, tho' considerable ; I could not ascertain the range of temperature as I had unfortunately no thermometer ; I should be entirely at a loss to what cause to ascribe the appearance of the disease, had the sepoys in general not been living on very poor and new grain, a kind of dholl which had been newly cut, and being cheap, was much used, as the battalion was in want of means of procuring a more wholesome food ; and from its use, I account for a common diarrhœa, which many of the sepoys were attacked with, before the appearance of the epidemic. It was however very trifling, and yielded to a dose of laxative medicine ; and but few of the men were required to be admitted to hospital for its cure.

No cases of the disease have occurred since the battalion arrived at Hyderabad.

The following short statement will show the proportion of deaths under the two different treatments ; from the 9th to the 15th inclusive, the number of admissions amounted to 34 ; within that period, the stimulating and antispasmodic medicines were used ; out of that number, and under that treatment, 18 died. The tartrite of antimony was then had recourse to ; from the 16th to the 30th, the number of cases amounted to 133, of which 46 proved fatal ; so that the number of casualties decreased from more than a half, to about a third.

ASST. SURG.
T. STOKES,
2D BAT. 1ST
REGT. N. I.
1821.

AN attempt has been made to trace the history of this dreadful disorder from its earliest commencement, its progress, and decline in this corps; nothing is related which did not actually occur, and in diseases like this, the record of facts is of the utmost importance, as it tends to shew how far remedies are known to control their destructive influence, and to furnish materials for elucidation of their nature and causes.

The battalion left Nagpore, February 6, 1821, under orders to march to Trichinopoly; the men were then in a healthy state and continued so with the exception of trifling complaints till they arrived at Secunderabad, March 11th. Upon their coming here, they were encamped, (the men and officers) in a small recess, among some low hills, near the Hoossun Saugur tank—the families, in more open ground, but low and near the edge of the water, at the south end of it. They remained whilst the sick carriage and other necessaries could be refitted and supplied, to enable them to proceed on their route. During the whole of this period it appears, that no case occurred which was considered as Cholera, and the first appearance of the disease noticed, took place on the 19th March, in Thomas Hitchens, Quarter Master Serjeant, who was suddenly seized in the night time with severe vomiting and purging, accompanied with spasms of the lower extremities, and died about twelve hours from the period of attack---on enquiring into the history of this case, Hitchens is said to have been a good deal exposed to the influence of the sun for some days before, in the execution of his duty; that he had frequently staid out late at night, and drank freely; and that he had in consequence been attacked with purging by which he was greatly reduced, and became very weak.

The next case occurred the following day in Veerapen, a sepoy, 7th company, who was attacked with it in a severe form, and died in a few hours.

On the 21st, the battalion moved ground to proceed towards its destination, and encamped at Dauttund, a village over the city of Hydrabad, when Piney Undy, another sepoy was seized, and died also in a few hours.

There was now a regular and progressive movement made towards the Kistnah river, with a few cases now and then occurring, three of which were fatal, but for the most part, mild and tractable. On the 31st March, they encamped about six miles north of the river and crossed it April 1st, when the regular progress of the disease is lost—they pitched on the south side on sloping ground of black soil, near the village Khatoor, when it broke out all at once with great malignity, spreading consternation and alarm in every direction; the followers were the first who suffered on this occasion, and among whom it was observed first to appear, as some women were attacked almost as soon as they had crossed the river.

The fatality on this day was considerable, and the suddenness with which it burst forth, and the very severe character which it assumed, caused the greatest confusion.

Of those admitted into hospital, ten died; and among the families, it was reported, six, but amongst the irregular followers it is probable there were many more, as the sick were lying in all quarters; many left to their fate, friends and relations forsaking one another, each being fearful for his own safety.

April 2d, the ground was changed to Byeapoor, and the camp pitched on high, clean red soil; there was a trifling diminution in the number of seizures on this day, but no abatement in fatality; nine died in hospital, and among the families, eleven.

April 3d, the battalion crossed the Toomboodra river, and came to Kurnool, where they remained till the 6th, encamped on high, black ground; the violence of the disease in these days somewhat abated, but there did not appear any prospect of its subsiding; the casualties, though less in number than on preceding days, were yet considerable; on the 3d, the second dresser died.

April 6th, moved ground and came to Pundypad; 7th, no abatement in

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the disease; the deaths many, and among them, Mr. Asssistant Surgeon Rumbold; he awoke in the middle of the night and complained to an Officer sleeping in the tent, of an extraordinary feeling of anxiety and giddiness in the head, vomited once, was two or three times purged, which was quickly succeeded by great prostration of strength, and he died a few hours afterwards.

Mr. Rumbold had undergone much fatigue both of body and mind, and was (perhaps unfortunately) very apprehensive that he should take the disease; and the cause whence this dread of it seems to have arisen, was a circumstance which happened on the first or second day of its active period, and which, it seems, had made a great impression on his mind; whilst visiting some bad cases he was seized with sickness at stomach and giddines in the head, and on coming out of the tent, he fell down faint, and from that period, believed or fancied that he should become one of its victims.

From 8th, to the 12th, there was great diminution in its violence, and from 13th to 15th, nearly a remission; during this time the progress of the corps was very slow, and they came to Gooty Anantapoor on the 15th, and it broke out that day afresh, with much activity, and continued with but trifling diminution or intermission till the 25th, when the cases became less numerous, and much milder in their symptoms; from the 25th April to 9th May, very few cases of Cholera presented, with the usual symptoms; but the number of purging cases, slight, with watery stools was considerable, and, were the disease, perhaps, in its mildest form; they were for the most part of a trifling nature, subsiding spontaneously very often, or readily yielding to the exhibition of medicine; from the 9th to 22d May these greatly decreased, and among them, only three decidedly marked cases of Cholera occurred, viz. on the 11th, 16th, and 17th.

Thus was the general progress of the disease beginning with the case of Hitchens, March 19th, up to this period May 22d, when it may be said to have subsided.

With regard to the characters observable in this disorder, they are sufficiently obvious as almost not to mislead the most inexperienced in his decision on it; the most striking are the remarkable and rapid prostration of the vital powers, and a want of harmony or equilibrium in the performance of the animal functions; the symptoms developed in its course preserve an uniformity of kind, but materially differing in intensity, giving it a variety in shape or form, which for the sake of clearness may be divided into three states, or stages.

The first, or simplest, was distinguished by a slight degree of vomiting and purging of a watery fluid, varying in color, sometimes of a clay, yellow or whitish; very generally preceded by nausea and a sensation of anxiety or uneasiness, which is observed to usher in, more or less, every disorder which affects the whole system; there was a coldness of the surface, and sometimes cramps of the lower extremities, but more frequently none; slight thirst, and some heat at the epigastrium, an expression of anxiety in the countenance; the pulse was sometimes natural, quickened, or slow, but generally small; sometimes there was a slight febrile state of the system, the skin was a little hot and dry, the pulse a little full, when some giddiness or pain in the head would be complained of, and a sensation of fullness at the prœcordia; this was observed generally in such cases as had applied after the vomiting and purging had ceased.

In this class there was very little evident prostration of strength, but they were much disposed to remain quiet, and moved about with reluctance.

The second was a more severe form, and that which not unfrequently became the second stage of the first, when remedies failed to check its progress, or application for assistance had been delayed; in it, the vomiting and purging were more severe, the spasms more acute, and seated commonly in the gastrocnemii muscles; pain was complained of in the abdomen; thirst and heat at the stomach;

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the breathing often laborious and short, the pulse was fluttering, faint and quick, the body and extremities cold and bathed in a cold clammy sweat, sometimes hanging on the epigastrium, face, and forehead in large drops; the features shrunk, the eyes sunk and the lids half closed, the voice weak and hollow; there was great prostration of strength, and the patient lay in an apparent state of unconsciousness of surrounding objects, from which he was readily roused by a sharp question.

The next was the most concentrated form in which it appeared, and from which few got safely away—it was that in which the greater number of deaths occurred, either forming the first attack, or becoming the second stage of that just above described—in it, many of the above symptoms were absent, or in an aggravated form. When it was the primary attack, the man was generally once or twice purged, which was rapidly succeeded by great prostration of strength, and a deprivation of every kind of power—he did not appear to suffer pain—became cold, without pulse, and unable to move, the voice was sometimes gone, at others he could speak only in a loud hoarse whisper, the features shrunk and often of a ghastly aspect, the skin was generally of a clammy moisture, and sometimes covered with a profuse sweat, but more frequently not; heat at the stomach and thirst were sometimes teazing sensations to the patient, but they were very often not complained of, unless he was interrogated about them; there seemed to be no spasms; a peculiar and offensive fœtor was observed often to issue from a body in this state, most striking when it was covered with much sweat; it was very disagreeable when first perceived, and seemed to hang about the nostrils, exciting long after, an unpleasant sensation.

These symptoms were to be traced in the variety of cases which occurred, but they would not of course be looked for in one, individually. The prognosis, in almost all of the last shape, would be unfavorable; in the second often doubtful, and in the first, was very generally clear.

In the simple form of the disease scarcely was there an unfavorable termination; when early combated it was easily overcome, but when neglected, it advanced towards the next, and became more severe and obstinate; but, as the progress was in a measure, gradual and regular, the energies and functions of the system did not appear to have sustained such exhaustion and derangement, as when the attack was of a more violent and sudden nature; and they were capable of excitation, restoration, and support.

In the more severe and graver forms, the danger was of course greater; the attack was sudden, the vital powers seemed oppressed, or to have received an impression of a deleterious quality, under whose operation they sunk down; of this description were the following cases.

Case 1st.—April 13th, a young woman, wife to Shaik Ameem, Naigue, was brought about 2 o'clock P. M. She had been seized eighteen hours before with very slight purging, one or two stools, and soon became very weak; was insensible to surrounding objects, her eyes covered with a film of a glassy, shining appearance, (noticed among symptoms as one of the disease, but the only instance in which I saw it), the pupils dilated and fixed, features shrunk, no pulse at the wrist, and but a mere vibration, difficultly perceived, at the humeral artery; the limbs cold and clammy, the body covered with a copious sweat and warm, from being well wrapped up in thick cloths preventing evaporation, the voice was gone, there were faint twitchings of the mouth and eyelids, and a cadaverous odour emitted from the body—she died in a few minutes.

This young woman had been delivered of a child about six days before, and her mother-in-law, two days previous to that, had a pretty severe attack of cholera; they both slept together in the same little tent; the old woman recovered, and became the daughter's attendant.

Case 2d.—April 14th, Needanpettah, Granadier, an old man, was brought

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nine o'clock this morning, skin cold and clammy, features shrunk, pulse not to be felt below the axilla, has had three watery stools but no vomiting; habeat statim

Hydrarg. Submur. grs. x
Ammoni. Carbon. grs. v
Pulveris Opii grs. ii

ficet Bolus, et pro haustu superbibat. tinct. opii gtts. xl. liq. ammonia gtts. x in aqua mentha ℥ ii—bolus et haustus quaque hora repetand v.

At half past 1 P. M. had been seen four times and was much in the same state; his lower extremities and feet a little warm, mustard poultices to the legs and epigastrium were applied. 4 P. M. the breathing is oppressed and he is restless, has not spoken the last hour; the opiate draught given every half hour, liniment of turpentine and ammonia to the chest and abdomen; he lingered till six o'clock.

Case 3d.—Goopalloo, sepoy, 5th company, a young man, was brought to hospital about two o'clock P. M., had been purged three times two hours before; cold, and a profuse sweat on the body, arms and head; there has been no vomiting, and he is now seized with cramps in the legs, he took the same medicines as Neeamputtah; his pulse was weak and slow, blood was attempted to be drawn, but only two or three ounces flowed; mustard poultices to the legs, and hot fomentations to the abdomen.

At 4 P. M. has been seen twice; the symptoms much the same, with a a greater depression of strength; the pulse gone at the wrist; the pill was continued hourly, and the draught given every ten minutes, omitting the laudanum every second dose; saw him several times in the evening, and he was gradually sinking; his death was reported just before marching next morning.

Case 4th.—April 15th. Last night about 12 o'clock, Ramsawmy, sepoy, 1st company, was brought to hospital; he had been seized three hours before, with purging and became very faint; he had no pulse, and every unfavorable symptom; the calomel, opium, and ammonia, were given as in the preceding cases, and stimulants externally and internally, as auxiliaries; on arriving at the encamping ground this morning he had suffered no material change; the same plan was pursued, increasing the stimuli in frequency, and in doses; in a short time the pulse began to rise, and to be faintly felt at the wrist, and the body was becoming warm; it was a delusive symptom; he sunk in a few minutes, and died at ½ past 10 A. M.

Case 5th.—Choury, sepoy, 5th company, was seized early this morning and brought into hospital at ½ past 9 A. M., had slight purging, and once vomited watery fluid, which was succeeded by very rapid prostration of strength; the body cold, the pulse perceptible, and seemed to labour under oppression, rather than debility; the breathing laborious and short; the same plan of treatment as before noticed was pursued, and a vein opened; but little blood could be drawn, extremely black, which soon thickened in the cup, and looked like the crassamentum in a state of putrefaction; hot fomentations were kept to the body and stimulating liniments rubbed on the extremities; these were steadily continued till 4 o'clock P. M. when it appeared that nothing further would be of use, and he died in a few minutes afterwards.

Cases 6th & 7th.—Aprill 6th. Iyelloo, sepoy, 6th company, and Permallo, Puckally 8th company, were both admitted this morning without pulse, a cold clammy sweat on the body, face, and forehead, hanging in thick large drops. Iyelloo lies quiet and torpid; the other, restless and turning about. The stimulating plan of treatment was regularly applied, internally and externally, till evening without any symptom of returning energy, and they died. One had but a single stool, the other purged four times, but neither vomited.

Case 8th.—Royapah, servant to Colonel Bishop, was attacked in the night with severe vomiting and purging of watery fluid, and came about 7 o'clock this morning, with great depression of vital power, quick faint pulse; mixed with the

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stools are some undigested grains of rice, apparently half boiled; the stomach was swelled out, and from the quantity of water evacuated, a considerable quantity must have been taken in. Three grains of the antimonium tartarizatum were given, and rejected almost immediately, by a single gulp, followed by a few ounces of clear water by stool; the same quantity was given in fifteen minutes, and repeated a third time after the same interval, attended each time with the same effect; he complained of a sensation in the stomach and bowels as if they were twisted up, as he expressed it. The emetic was now given every half hour and to be continued until complete vomiting should be excited; he took three doses with the same effect as the preceding; every time it was gulped up, the pulse vibrated with a little more strength, but soon fell back again; a fourth dose failed to act even as before, and remained on the stomach, the pulse was fuller at the wrist and the body a little warm; he sunk and died in half an hour from the last dose. The full action of vomiting could not be induced, but merely that convulsive effort of the stomach which is peculiarly observable in this disease.

Case 9th.---April 17th. Soobooroyan, a servant to Colonel Bishop was, attacked in the night time with severe vomiting and purging, and got extremely faint; he recovered a little, and did not report sick till 8 o'clock this morning; he came cold, the pulse was weak but distinctly to be felt, and about fourteen ounces of blood were taken; he fainted almost immediately afterwards, and remained the whole day in a sunken state. The stimulating plan was tried to rouse the energies of the system, and persevered in until the next morning; but, it appeared, without any effect, and he died at 9 a. m.

Case 10th.—Jow Sing, sepoy 5th company, had very slight purging without vomiting; skin cold, pulse weak and quick; he seems rapidly sinking, an offensive fœtor issues from the body. A stimulating draught was given, and a vein opened. The blood flowed moderately free, he became faint, and threw up about a quart of clear water and passed by stool as much, with some undigested grains of gram, and in a few minutes afterwards, died.

These cases were taken as they occurred and are characteristic of the generality of those terminating fatally. It may be remarked that, in this severe description of cases, whenever there existed that cadaverous fœtor before mentioned, in no instance did a recovery take place. Another symptom, which was looked on, when it occurred, as the almost certain indication of an unfavorable issue, was a sudden rising of the pulse, and glow of heat on the body, as in cases 4 and 8; it was observed in several instances; the heart seemed to give a few strong strokes, which set the blood in motion, but they were of a convulsive kind, and of short duration, like the last faint glimmerings of a lamp, that brightens for a moment before it expires.

With regard to the curative means used, the stimulating plan of treatment was that principally adopted in all forms and stages of the disease, and in the mild, and less severe, it was found to succeed well. Where the symptoms were more violent and threatening, bleeding, in conjunction with stimulants was had recourse to in many instances, and when the pulse was distinctly to be felt and seemed to labour under oppression, rather than debility, accompanied with laboured respiration, was generally followed by relief, but only in a few with success; the blood either did not flow freely, or in sufficient quantity, perhaps, to be of use; in those cases detailed, in which it was used, no good was obtained; the patients afterwards sunk, and the system could not be roused to a state of re-action.

The effect of the tartrite of antimony as a remedy, little opportunity was afforded for observing; as it was tried only in a few cases; in the one which has already been detailed it did not produce the intended object; it will be seen that it was pushed freely, but the susceptibility of the system to be acted on by it was either destroyed by the morbid action going on at the time, or it might not have been given, perhaps, in sufficient quantity; in another it was attended with success.

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May 11th, Shaik Emam, sepoy 4th company, came to hospital about six o'clock in the evening; he had been vomited, but not purged; was cold, faint, and without pulse, features contracted and eyes sunk. He vomited a frothy fluid with a good deal of straining; the whole of the muscles usually engaged in the operation were so at that time, but not that convulsive effort of the stomach so commonly seen in Cholera; he took three grains of T. E. dissolved in a little water, which operated well; nothing particular was discharged from the stomach; the skin afterwards became hot and the pulse rose; next day there was a little febrile irritation of the system; hot dry skin, pulse moderately full, pain in the head, and bowels costive, took three grains of calomel with fifteen of rhubarb, and had an injection in the evening as the evacuations were not free; 14th, is free from disease, but complains of weakness, and has a sore mouth; his mouth continued sore for some days, which was attributed to calomel.

The efficacy of calomel in allaying the irritability of the stomach, no opportunity occurred of witnessing, as it was never used alone; nor, what was the effect of the carbonate of ammonia, as that was always given in combination.

Of the powerful operation of opium singly, in arresting the progress of the disease, exciting and supporting the sinking energies of the system, evident proof was afforded in a severe case.

April 24th.—Bawa Saib, havildar D: company, came to hospital at 6 o'clock, A. M., had been vomited and purged during the night, several times; skin cold, pulse difficultly felt; a mere vibration; he appeared to be sinking rapidly, and as cases in his condition, very generally resisted the usual mode of treatment it was varied, and opium in larger and frequent doses alone, instead of combination, was given; he began by taking four grains half hourly, which was continued two hours, at the expiration of which, there had been neither vomiting nor purging; the pulse had risen, and could be distinctly felt, though it was very feeble—the extremities were cold, the body warm, and a trifling moisture perceptible in the axilla; he complained of thirst, and felt drowsy—a small quantity of brandy punch was given, and the pills continued as before for one hour; he was then seen and was fast asleep; the pulse was stronger and a general glow of heat diffused over the surface; the eyelids were half open, and the conjunctiva suffused with blood.

As soon as he should awake, it was directed that a stimulating glyster should be thrown up the rectum, and that one pill should be given every hour—he slept three hours—the injection was administered, which was soon rejected and followed by a scanty solid stool of a yellow colour—at 4 p. m. he was drowsy and stupid; the pulse was becoming gradually stronger, and the body hot and dry; the breathing a little laboured; two more pills were directed at the same interval, and he was seen at 6 o'clock; the pulse was then full and strong, and about 80, the breathing free, eyes suffused, and thirst urgent.

The disease being considered as overcome, and that he was fully affected by opium, it was discontinued, and in place of the pill a brisk cathartic was given; at 8 o'clock, there had been no operation from the purgative; he was drowsy, eyes red and staring, skin hot and pulse full, thirst great, an ounce of the sulphate of soda was dissolved in eight of water, and sipped occasionally, and a purgative enema given—he had three stools and felt much relieved.

25th.—6 A. M. had passed a comfortable night and was much better, there was a slight febrile state of the system—took a purgative powder which operated well in the day, the stools dark.

26th.—Complains of nothing but weakness—It was necessary to use purgatives several days afterwards to obviate a costive and torpid state of the bowels, and he went out well, May 4th; his mouth and gums were sore for several days, as though he had taken mercury.

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Another case occurred, in which, opium, in less quantity, was beneficially used. Arrey Cooty, naigue, grenadier company, entered May 8th in the evening, had been vomited and purged several times during the day, countenance shrunk, covered with cold clammy sweats, voice weak and hollow, and the pulse gone; on admission he took sixty drops of laudanum with ten of the liquor ammoniæ in two ounces of peppermint water; half an hour afterwards, a pill of two grains of opium swallowed with the same draught, omitting the laudanum, and to be repeated half hourly, for four doses; at the expiration of this time the pulse had risen at the wrist and the body was becoming warm; this plan was now continued hourly through the night, and the next morning he was greatly recovered; had passed two dark colored stools; three grains of calomel with half a grain of opium were given through the day, when every symptom of the disease had disappeared and he went out May 12th, well.

Among auxiliaries and external applications, the mustard poultice was serviceable in exciting the sensibility of the skin, and inducing counter irritation, when applied to the epigastrium. Upon the same principle, blisters were applied, and from their well known effects in other diseases, would seem to promise good in this, but in severe cases their operation appeared too slow, and in simpler ones might perhaps have been omitted with safety; but it may be observed that, when heat, pain and thirst were present at the epigastrium, in the slighter cases, the subsequent fever, or bowel complaint, which often appeared as a sequela of the disease, was mitigated and perhaps in some instances prevented, for they were more severe when supervening upon cases in which local excitation had not formed a part of the treatment.

A very useful and beneficial auxiliary was found in the opiate injection, or a lump of solid opium introduced into the rectum; it allayed in a very considerable degree the irritability of the intestines, and seemed sometimes to put a stop to the purging.

Fomentations and frictions, with warmth and stimulating liniments, were frequently used, in conjunction with internal remedies, but in very many of the severe cases they appeared to do more harm than good—affording a temporary relief, after which their continuance made the patient restless and uneasy, and he cried out to be let alone; they seemed to wear out the little remaining energies by exciting too much, at the same time that they did not support them.

Such was observed also to be the effect of diffusible stimuli, as spirituous tinctures, spirits, and essential oils; their action was to spread rapidly through the system, and unless this first action was kept up by a frequent and continued exhibition, it as rapidly subsided, leaving the system in a more exhausted state; and when continued, seemed like external excitants to wear out, and not support, the already sinking and weakened powers of life—this was also observed by Mr. Barton in his letter to the Board; he says, speaking of tincture of opium, æther and camphor.

" When there was great thirst, much anxiety, burning sensation at the precordia, and pressure on the seat of the stomach, causing and increasing pain, together with a florid eye, I found these means disadvantageous; each dose seemed to aggravate the severity of the symptoms, the patients complained more of the burning sensation and thirst, they appeared to be in much agony, from beating their stomach and chest, and rolling about incessantly after every dose, and the irritability of the stomach appeared to be, at least kept up, if not excited by, the use of those medicines."

This might probably arise from the unequal excitation produced, as they seemed to act more immediately on the brain and nervous system, than to have any decided operation in raising the energies of the sanguiferous, and was to be referred, more particularly, to the form of administering the remedy, than to the basis whence it was prepared, for when deprived of the vehicles which before con-

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veyed them, the same remedies were given in a simple and solid form, they were more certain in their beneficial effects, and, by a proper and regulated application, supported, at the same time that they excited the depressed, and languid powers of life.

The stimulating plan of treatment, pursued in this manner, was attended in a great proportion of cases with success; and in those which, from their severity, might be said to be beyond the power of medicine, seemed to soothe the latest struggles, whilst, on the contrary by the other mode they were teazed and irritated, as evinced, Mr. Barton says, by the incessant rolling about after every dose.

Where local applications and internal auxiliaries may be with advantage joined to a combination of calomel, opium and ammonia, or opium alone, can only be best judged when the cases are present; but in the disease as it occurred in this instance, the less they were employed the better it was; from the rapid progress with which this calamity runs its course, indications will very soon be shewn whether a favorable or an unfavorable termination will result from the plan of treatment going on at the time; and the symptoms from which was drawn a favorable prognosis were these, a tranquillization of the system and a gradual appearance of a returning equilibrium of action, evinced by a relief from irritability and restlessness; sleep or a disposition to it; a gentle and gradual diffusion of heat on the surface, terminating in a moderate sweat, and a regular and progressive rising of the pulse.

The sequelæ, which have appeared after the disease, and seem to have been the consequence of a morbid condition of the system it had excited, were chiefly visceral affections, as diarrhæa, dysentery, hepatitis, dropsy and some slight fevers; hepatitis occurred only in one instance, and readily yielded to local depletion and purgatives.

I believe it has been generally remarked, that the Cholera is a disease of sudden appearance, and seldom to be traced in its approach by any premonitory signs; in its decline however, there is some difference, at least in this, it was gra. gradual and progressive, and came from the most concentrated and virulent character, to a simple, and it may be said harmless shape; a trifling indisposition subsiding often without any interference, or readily yielding to simple remedies—its commencement, upon examination, would appear to correspond with its decline.

It has been observed, that as the disease decreased and disappeared, the symptoms became so mild, and in many instances so very trifling, that they were marked among the trifling complaints, and might have existed at any time, but as they prevailed, at the present, in different degrees, from an evident attack of cholera, to a simple purging of a few loose stools, were to be considered as arising from the same causes.

On enquiry into the nature of the prevailing diseases sometime previous to the 19th March, bowel complaints, similar in character and symptoms, to those mild purging affections above spoken of, were found to be of frequent occurrence, and like them, varying from a few loose stools to rather a severe shape—they are described, as having chiefly come on in the night time, with watery stools, weak pulse, countenance sunk, surface cool; in some, vomiting was a symptom—the evacuations were sometimes green or yellowish, and in one the pulse was gone—they seem to have readily yielded to treatment, or to have gone away spontaneously; a slight febrile state of the system has been noticed in some of them, after the cessation of vomiting and purging; this description bears a strong similitude to the first or simple form of the disease already noticed, and would appear to be characteristic of it, or of one very similar in its nature to it; a case or two will illustrate it better.

A man was admitted into hospital at eleven o'clock at night, the day the corps left Nagpore, speechless, cold and without pulse; he was said to have been vomited and purged in the day several times, passing a greenish watery fluid; he

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took a scruple of calomel and was kept well covered with cumlies; next morning the pulse was slowly rising and the body becoming warm; febrile symptoms supervened, and continued some days, assuming the remitting type.

Sied Meen, sepoy 5th company, came to hospital February 24th, with symptoms of a mild nature which soon subsided; was attacked again March 6th, in a slight manner; and a third time, April 8th, in a severe way, and died the following day.

Another case bearing some resemblance from its description was Narrina Sammy, sepoy light company, March 1st. It says, "he was purged two times during the night, some undigested grains of rice mixed with the stools, pulse weak, countenance rather sunk."

One more distinctly noticed came, March 6th, in Joavoyer Sing, sepoy. "This man was much purged last night, and is now in a very weak state (5 A. M.) He has had during the march, and since, three watery stools; when he reported sick his pulse was scarcely to be felt, but now they are more perceptible."

Similar cases occurred more or less frequently up to 19th March, when that of Hitchens was noticed, as the first cholera; on the two succeeding days two more fatal cases occurred, and it is then progressively traced till April 1st, when it took on an epidemic shape; to whatever causes may be attributable its sudden appearance on this day, in so aggravated a form, whether it be said that a principle of infection had existed, in an almost dormant state, for some time before, and was excited into action all at once by the concurrence of adventitious circumstances, or whether it depended solely on epidemic causes, it is worthy of remark, that a coincidence was observed to take place, which has been repeatedly remarked in other diseases, and, I believe not unfrequently in this; that an accession and increase in violence of disease are manifested at certain periods of the moon, and in the course of this dreadful visitation it was remarkably evident.

On 2d April there was a new moon, the day before, that day, and the following, are very distressing; an abatement took place and towards the 15th nearly a remission; the 17th the moon was at the full---the 15th and a few days after the 17th it took on a greater degree of activity and was nearly as bad as on the 1st—it is to be remarked also, that the first fatal case occurred March 19th, when the moon was at the full.

Some cases may now be mentioned which would seem to favor the supposition that it may be, or is, capable of propagation by actual communication with those sick of it—During the time that the disease raged with that degree of malignity and fatality which is noticed on 1st April and afterwards, opportunity was not favorable for much inquiry or observation, regarding its nature and properties; but as it decreased in violence, and cases became less numerous, and milder in their symptoms, there was a greater facility afforded for learning their history, and watching the occurrences which took place during their progress.

It was found among many who came to hospital, that, some time previous to their being attacked, the disease had existed in the family to greater or less extent; in some, one branch had been ill or died; in others, it had spread progressively through the whole, or nearly, and among such as officiated as orderlies or attendants at the hospital, several were observed to fall sick, and some to die.

The first case which was observed to be of this kind, was in a man who had assisted in using frictions with Hitchens; he was attacked severely 24th March and recovered---the next were the Second Dresser, and Assistant Surgeon Rumbold--In the first case recorded of the young woman, it was remarked that her mother in law had been ill with the disease, and that they both lived together in a little confined tent—in the two servants of Colonel Bishop, the boy who died on the 18th, was in attendance on his fellow servant who died 16th.

Goopalloo, a drummer, was attacked on 18th and died, in the afternoon;

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another drummer, who had been his orderly, was seized with it—On 20th, Jagker and Moony Cawdoo, brothers, were admitted with slight symptoms, both had been purged several times with watery stools, and Moony Cawdoo once vomited—skin cool and felt contracted, pulse quick and feeble, no heat nor thirst complained of; they took calomel and opium pills hourly, and after a few doses all symptoms of the disease had disappeared, but considerable debility remained several days; these men lost their mother, after a few hours severe attack, fifteen days before; they had attended her in her illness, and slept afterwards in the same little tent where she died.

April 30th, Tookkoor, and Sundin Misseer were attacked with rather severe symptoms which were removed by the calomel, ammonia, and opium; they had been orderlies to Cholera cases.

Several other similar facts might be adduced, and some others occurred of men, who were sick in hospital, taking the disease, and dying, from being in the same tent near to Cholera patients—of this kind were four.

It appeared among the Dooly Bearers who lifted the sick, in and out the Doolies, and who were often employed in using frictions with them; in these it did not shew itself till the 5th April; when, if any contagious quality existed, there was sufficient time for it to appear.

It is to be regretted that there was no opportunity for examination of those who died; the prejudice and aversion of the natives against it could not be removed, and the proposal was always received with dissatisfaction; from the numerous histories of dissections however, what would have been the appearances may be pretty fairly inferred.

The sanguiferous system was evidently the seat of much oppression, and from existing symptoms, conjestions might be supposed in, and about, the vital organs; what was the state of the capillary vessels, would be difficult to say, but it did not appear that the blood had retired from the smaller vessels of the extremities to the internal and large ones; the whole seemed rather in a turgescent condition; the blood being stagnant in them; the smaller veins of the extremities were seen full, flaccid, and dark coloured; and the arteries when the pulse was gone, did not seem empty, as they could be felt as it were injected, the fluid being motionless, the radial at the wrist, and the posterior tibial, at the inner ancle, were felt full, when they did not beat, and the three principal branches of the temporal were seen full, flaccid, and dark coloured like the veins.

The brain and its nervous system did not appear to have suffered such a derangement in the performance of its functions as the sanguiferous; sensation and volition, though frequently much impaired, were capable of being roused and excited into action; the faculties were clear, there was no coma, the pupil seldom dilated, but in the moment of death, the men certainly lay quiet and apparently unconscious of surrounding objects, but he was readily roused to sensibility, and would reply to questions, and when the voice was gone, would use signs.

The vital principle seemed that most evidently affected; the derangement of the different parts of the system, resulting as a consequence, and symptomatic of it, whatever may be the nature of the disorder, is involved in great obscurity, but it is clear, from the effects it produces, that it is an agent of a very deleterious quality, whose operation is prejudicial, and destructive to human life.

Remarks on the use of Milk and Magnesia in the Epidemic by Dr. A. Campbell, H. B. Jaulnah, Sept. 1820.

In the course of my enquiries, relative to the nature of the disease, for the cure of which, the Magnesia and Milk has been used in the bazar; and with regard to the utility of this remedy, in the epidemic, so long, and fatally prevalent in India, I have been led to draw the following conclusions.

1st. From the information received on examination of the greater number of individuals who have benefited by the remedy: it appears to me, that, Remarks on the use of Milk and Magnesia in the Epidemic by Dr. A. Campbell, H. B. Jaulnah, Sept. 1820.

of the number of cases of disease occurring in the bazar, and supposed to be the epidemic, nearly four-fifths were cases of Cholera Morbus; a disease, which, though offering a striking similarity in some of its prominent features to the former, I conceive is as essentially different from it in its nature, as rheumatism from gout, chronic hepatitis from dyspepsia, and many other diseases; the shades of distinction between which are often so slight, as to render it frequently difficult, for medical men of long experience and sound observation, to form a just diagnosis.

2d. With regard to the utility of the magnesia and milk in the cure of the epidemic, the few facts which have come under my own observation, or have been communicated to me, by other medical officers who have tried it, dispose me to conclude, that the remedy is inadequate to the cure of this formidable disease; which evidently originates, not from the presence of an irritating matter in the stomach and first intestine, as is generally the case in Cholera Morbus, but from a general derangement, or disorganization of the nervous, and sanguiferous systems, the restoration of which to their proper functions must be produced by some remedy more diffusible and general in its action, than the abovementioned.

It is well known that magnesia is totally inert in the stomach unless it meets and combines with an acid there, a substance, which I believe has never yet been detected in cases of the epidemic.

The milk, as a mild, bland, and pleasant drink, more soothing to the stomach, when in a state of irritability, than conjee, and the other drinks in use, I think, (as I have found it to be,) a useful addition to the present method of cure, in as much as, it assuages one of the symptoms most distressing to the sufferer's feelings, viz. the urgent thirst, with less risk of exciting the spasmodic action of the stomach, than the more attenuated fluid.

When it is recollected, that powerful frictions, aided by the application of heat, were used incessantly throughout the treatment of the cases said to be cured by the magnesia, and milk, I feel strongly inclined to attribute the recovery of the few real cases of the epidemic to the action of these two most potent agents, in stimulating the nerves and blood vessels on the surface, and restoring the balance of the circulation, in the derangement of which, the disease seems to consist.

Asst. Surg. A. Campbell, Jaulnah, 1st July 1820.

On the 12th of June an epidemic broke out in the lines of the Horse Brigade; which, before the end of the month, had attacked three fourths of the Europeans, and a few of the native followers: its symptoms and progress were in almost all the individuals affected, so invariably similar, that I have detailed only one of the cases received into hospital.

It commenced in general, immediately after sun-set, or just before day break, with sudden and violent vomiting, and purging, of thin, white, watery substance; an unpleasant, and often extremely painful sensation of burning in the stomach, and fauces; a disagreeable roughness at the root of the tongue; and great prostration of strength; but little alteration in the state of the countenance, the heat of the body, or the pulse. After the first attack, the vomiting generally ceased, or returned at long intervals; but the purging of white matter continued, accompanied by griping, and the abdomen became painfully tumified, and tense: in a few cases the vomiting was accompanied by spasms in the extremities; in others, no cardialgia appeared.

Many of the men who neglected to apply for aid on its first attack, had a troublesome diarrhœa with swelling of the abdomen, which generally took place at night, with anorexia, emaciation, and great debility, from which they did not recover until the system was affected by mercury.

The disease, in all its stages, was most troublesome and severe in the

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night. The patients in general described the matter vomited as tasting " like salt broth" ; in some it was strongly acid.

In this disease the indications of cure were obvious ; to those patients who had the burning sensation about the stomach, magnesia, with calomel, was exhibited in repeated doses, until the desired effect was produced, when purgatives were then given : of these I found the neutral salts, alone, and in combination with senna, and the oleum ricini, the most useful—if the evacuations were not changed in appearance, after the first dose of physic, calomel, in combination with the pulvis antimonialis was exhibited every three, or four hours, with a laxative every morning, until the constriction of the extreme vessels, and the biliary organs yielded ; when a flow of most brilliant yellow bile, scalding in its passage, succeeded. Bitters and laxatives were then used as required. In many cases, where there was much acidity in the primæ viæ, the evacuations changed after the first dose of magnesia and calomel, and a single purgative finished the cure. In many where the presence of acid was not so obvious, the treatment was commenced by a large dose of ipecacuanha.

This disease, the occurrence of which, I could not avoid connecting with that peculiar state of the atmosphere, so obviously predisposing the body to the series of morbid actions constituting the epidemic so fatally prevalent in India, has been confined solely to the lines of the Horse Brigade, which are situated on an eminence about 300 yards in front of the general line, and where the troops, as I stated in my report to the Board in August 1818, had so extraordinary an exemption from the epidemic. One case only, of the epidemic cholera occured within the last six months ; the patient was a horsekeeper. The climate has been particularly unfavourable to children, especially during the last month, many of them have been suddenly carried off by convulsions, and inflammation of the bowels.

Surg. W. Pollok, M.D. Bangalore, 1st Oct. 1821.

From the arrival of the 53d Regiment at Bangalore up to the 12th September, a period of more than thirteen months, not one case of Cholera Morbus had occurred in the Corps. Since the 12th, no less than thirty nine soldiers, seven women and four children of the Regiment have been attacked with that disease.

Most of them were seized in the night after having retired to rest in their usual health, the cases were violent, and they were all greatly alarmed, being convinced that it was the epidemic, from which indeed, it differed steadily in one symptom only, viz. that of not arresting the circulation ; every other symptom of the epidemic was found in some one or other of the cases. In no case could the attack be traced to irregularity of any kind, a remarkable circumstance, and which in my mind displays the operation of some extensive cause.

Surg. Job, 13th L. D. Bangalore, 31st Dec. 1821.

Twenty-one cases of Cholera Morbus have occurred, principally in the month of September last, which was unusually hot, close, and dry this season ; and altho' some of them were violent, it had but little resemblance to the epidemic, so fatal and prevalent in other parts of India ; in some of these cases, although there was considerable spasmodic contraction of the upper and lower extremities, with constant vomiting and purging, the evacuations were always of a bilious nature, which generally yielded to bleeding, warm bathing, and drastic purges ; during this month several natives were attacked with the Spasmodic Cholera, some of whom died.

Ast. Surg. J. Cruickshank, Cuddapah 1st July. 1821.

Cholera, it had been hoped, had disappeared from Cuddapah, where an authentic case had not been observed since the end of March. Two cases are indeed reported to have occurred, in the 1st Extra Battalion, in the end of May : these were originally marked as cholera from the report of a dresser ; but on enquiry, and on attending to the progress of the cases, one was found to have ori-

Asst. Surg. J. Cruickshank, Cuddapah, 1st July 1821.

ginated from intemperance, the other to have been nothing more than the vomiting which accompanies the cold stage of intermittent.

On the 7th of June, the 1st Battalion 12th Regiment N. I. encamped at Cuddapah, on an open space on the right flank of the cantonment. The corps remained on that ground little more than 48 hours. Some cases of Cholera had appeared in it on the former day; but on the day of its arrival here, and on the day whereon it halted, several cases were admitted into hospital. On the 15th of June, five days after the 1st Battalion 12th Regiment had marched, one case of Cholera was seen in the 1st Extra Battalion, and on the 20th of June, a second: both recovered, and no fresh attacks occurred.

The ground whereon the 1st Battalion 12th Regiment was encamped is distant upwards of two miles from the jail; nor can it be at all supposed likely that intercourse of any kind could have subsisted between the convicts and the sepoys of the 12th Regiment; yet on the 19th of June, and on the day following, thirteen cases of cholera occurred in jail, of which number three died.

Contiguous to the jail is a street occupied exclusively by Bramins. The public servants in the Zillah Court have their residences chiefly in this street. Here cholera prevailed, and was exceedingly fatal, on the same days whereon the casualties occurred in jail. Between the Bramins, inhabiting this street, and the convicts, the intercourse is manifest, the same inclosure being common to the Court house and the jail; but nothing could have been less expected than that the sepoys of the 12th Regiment should have conveyed the disease to those Bramins.

The mercantile class, inhabitants of the bazar, those only to which the sepoys of the 12th Regiment could be supposed to have imparted the cholera, entirely escaped it.

The identity of time renders it almost impossible to doubt but that the disease which broke out in the jail and street contiguous was brought to this station by the 1st Battalion 12th Regiment. The escape from infection of those with whom only the sepoys can be supposed to have associated, and the occurrence of infection among those most unlikely to have had communication with the sepoys, serve to indicate the very peculiar mode by which cholera is conveyed, and the extreme dissimilarity between the laws regulating its propagation, from those of contagion in general.

It has been reported that Cholera has lately changed its form, or parted from certain of its more fatal or more characteristic symptoms. Nothing of that kind was observed in those cases which lately occurred here: the appearance of the sick, and the progress of the symptoms, and the effect of remedies being precisely those which have been always found to attend the disease.

Asst. Surg. J. R. Alexander, A. B. Secunderabad, 12th July 1822.

I have long intended submitting to your notice a few remarks on the nature and treatment of the Epidemic Cholera, but desirous first of learning from the opinions of others, whether my ideas of the disease carried any semblance of truth, I took every opportunity afforded me of laying my thoughts open to those I deemed capable of judging, and have heard my theory so generally approved of, that I should consider myself highly reprehensible in deferring any longer, to give information, possessing the remotest chance of checking one of the most dreadful scourges that has ever afflicted mankind.

I beg leave briefly to detail the symptoms, and morbid appearances I have noted in one case, as it is expedient for me, to establish the entire absence of inflammation in the disease.

The patient was a young man, and had been ill a few hours when I visited him; he was attacked with vomiting, purging, and spasms of the extremi-

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ties, but these symptoms were of short duration, and had ceased when I arrived at the hospital; more serious ones however existed; the body was deadly cold, respiration quick, and easy, and the air expelled by each expiration was devoid of the warmth it possess in health, or inflammatory complaints. Features were depressed, bowels had ceased to act, but at the commencement of the attack, a quantity of white, floculent fluid was passed by stool, which has hitherto been compared to conjee water, but which I take the liberty of calling chyliferous, as I hope to prove without the aid of chemical tests; extremities were cold, but under the control of the will. Thirst so insatiable that he constantly called out for cold water, which he swallowed with ease. Pulse imperceptible; in this state he remained some hours, when death closed the scene.

In his dissection we observed the following appearances. There was a diffused blush in the peritoneal covering of the small intestines, which I do not attribute to inflammation, but to the carbonaceous state of the blood, (a fact which will appear hereafter), not conveying a stimulus of contraction to the vessels, (arteries) and afterwards becoming oxygenized by the action of the air, the abdomen being sometime open. The contents of the intestines were of the same nature as the stools before described, which, together with other facts, viz. the absence of all fœcal matter in the large intestines, the striking resemblance of these contents to the chyle mixed with chyme, and the dark, carbonaceous state of the blood, justifying the appellation, I have bestowed on the stools. The descending colon, a small portion of the ascending, and the bladder were much contracted. The liver was loaded with dark blood, and the gall bladder distended with bile. The lungs were in the same state as the liver, and evinced no other mark of inflammation, but a small adhesion between the pleura of the right side, which being elongated, could not be of recent formation. The right auricle, left ventricle, and the large arteries arising from the heart, were also loaded with dark blood.

A blackness of the choroid plexus, and turgidity of the vessels of the pia mater, were the only unnatural appearances in the cranium, and these I think were caused by the obstacle that existed to the return of blood from the head, in consequence of the loaded state of the thoracic viscera, and the unstimulating nature of the blood.

As there was no symptom of inflammation before death, or appearance of such after, it is erroneous to call the disease an *inflammatory one*: on the contrary, I think it might be defined, "an affection of the sentient extremities of the pulmonary system of nerves, creating a sympathetic derangement in the nerves having any link of connection with them, and, by preventing the oxygenation of of the* blood, causing death."

The correctness of this definition will be almost established by the following reasoning.

Let us suppose the system of nerves of the lungs to be particularly sensible to impressions, and that from something deleterious in the air their functions become deranged, or put a stop to, an assumption not at all extravagant, as we know, that the retina is at times easily deranged, and its functions suspended, or destroyed by strong light. Let us suppose then such a case; what will be the consequence? I think we may calculate upon symptoms similar to those attending Cholera to be the result, and nearly in the following order. All parts having nervous connection with the lungs, become disordered in their actions; the stomach, bowels, and bladder, reject their contents; and the extremities are thrown, into spasms. These are the immediate results, and are analogous to vomiting caused by disagreeable odours, and sneezing from exposure to strong light. The

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* Copeland's Thesis *proves* that the oxygenation of the blood, depends upon the nervous system, vide Cop. Thesis.

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exciting cause continuing its influence, either paralizes the nerves, or renders them so torpid, that they become insensible to the usual stimulus of the air; their sympathies are broken, and the blood being no longer freed of its carbon, by reason of the secreting vessels not possessing their nervous influence, becomes of a dark colour, and unoxygenized, as the oxygen of the atmosphere cannot permeate the air cells and coats of the arteries to perform that function—symptoms strikingly characteristic next set in. No animal heat is evolved,—the body and breath become deadly cold—the secretions are stopped; the chyle, which is the supply of the waste of carbon, is no longer absorbed, thus accounting for its appearance in the intestines—the pulse dies away, from the arteries, losing their usual stimulus to act;—finally the larger viscera and vessels about the centre of the circulation become choaked up, and death necessarily ensues. But to proceed from supposition to fact ——The perfect collection of the senses, the ease with which the patient swallowed, and the power the will possessed over the extremities, convinces us that neither the brain or spinal marrow could have been the seat of the disease. That *it* did not exist in the abdominal cavity may be imagined, from the absence of all appearances that could justify us in thinking so, and from a certainty that no derangement of *its* vicera would prevent the blood being oxydized—which is without doubt the cause of all the mischief—it is natural to conclude then, that the disease existed in the sentient extremities of the pulmonary nerves, as no other affection could, I believe, produce the symptoms, &c. described.

If what I advanced, then, borders on truth, it is not at all irrational to think, some success may result from the following treatment. The peculiar effects excited in the human body, by the action of nitrous oxide gas, when received into the lungs, induces me to think *it* likely, to prove serviceable in removing the torpor of the pulmonary nerves—*It* can easily be administered, by introducing *it* into an oiled silk bag, or clean bladder, furnished with a stop cock, and breathed from such, until *its* excitement becomes visible; we may then substitute in its place, oxygen gas, that a speedy purification of the blood may be effected, and animal heat evolved, *which circumstances* would render us perfect masters of the disease.

Asst. Surg. A. Patterson, Masulipatam, 1st July 1822.

Early in April, I was detached to Ellore to furnish medical aid to the troops at that station, where I remained until the 10th ultimo; during that time, no diseases occurred, worthy of observation, except the Epidemic Cholera, and that only, sporadically. I consider this disease to have its seat in the stomach, and to have for its proximate cause, an increased, and morbid secretion of gastric juice. The definition of the disease ought in my opinion to be given as follows—an increased and morbid secretion of gastric juice, accompanied with vomiting, or purging, or both; and with spasms of the stomach and intestinal canal—the watery vomiting and purging I consider to be the morbid, and increased secretion of the gastric juice; and, when it is like conjee, it is from having destroyed small particles of the inner coats of the stomach, and intestines, and carrying those particles in the discharges. The chief effects of a few spasmodic gushes of this juice, either upwards, or downwards, or both, is the sudden and speedy diminution of the powers of vitality; hence the pulseless wrists, the frigid superior, and inferior extremities, and ghastly countenance. The same gushes destroy the balance of circulation; hence the determination and congestion of the blood in the different internal viscera. From the violent and convulsed action of such an important organ as the stomach, the functions of the brain, liver, and kidneys are suspended, by sympathy; hence lethargy, a total absence of bile, and of urine. The difficult respiration may, in my opinion, be attributed to the torpid action of the brain, rather than to congestion of blood in the respiratory organ itself. All agree that the exciting cause of this disease has its existence in the atmosphere, but of its nature, nothing is known. I feel convinced a corps on its march, catching this exciting cause, will carry it along with the corps for

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weeks, and to a very considerable distance. Let this corps be halted on the finest spot of ground possible; let healthy corps, join this, at short, and regular intervals, and I feel convinced the disease would attack these healthy corps in a few days, and according to their respective arrivals. If this be not contagion, I do not know what name to give it. The mode of treatment perfectly corresponds with the definition I have given of this disease—and it is our grand object to prevent, check, or remove, what I have considered the proximate cause of the disease, the increased and morbid secretion of gastric juice. For that purpose, bloodletting, blisters, and tinct. opii. are depended on, and when employed early in the disease, I am of opinion, they would seldom fail. The two first act in the same way, by determining from the stomach, and overcoming spasm. Tinct. opii is unrivalled in allaying inordinate action, or in restraining excessive discharges. Small doses of calomel are given, after the disease, to promote and excite healthy secretions; its best auxiliary, a bitter infusion, and they seldom fail in restoring healthy action to the different viscera.

The month of May was excessively hot and oppressive, but the rains setting in June gave us pleasant, and cool weather. Although the epidemic broke out in the European regiment, and attacked several, only one sepoy of the 15th had the disease, and it ended favorably—at present the disease has disappeared.

Surg. W. Pollok, M. D. Fort St. George 1st July 1822.

The fifty-third regiment, nine hundred strong, marched from Bangalore on the 11th of May in a very high state of health and efficiency, the sick-list contained only forty; every other man was at his duty, and not a man was left behind. They improved upon the march, and the sick-list decreased to thirty five, when on the 20th of the month, a furious case of this disease appeared in a man in hospital, a convalescent from dysentery; he died early the following morning. This was the commencement of a most awful visitation, and the following was the course of its progress.

20th	May	near	Palamanair	1	case.
21st	,,	near	Palamanair	1	,,
22d	,,	near	Vencottaghirry Pettah	1	,,
23d	,,	near	Chittoor	1	,,
24th	,,	near	Chittoor	2	,,
25th	,,	near	Nowsingry Pettah	3	,,
26th	,,	near	Mullpaddy	6	,,
27th	,,	near	Arcot	8	,,
28th	,,	near	Cowry pauk Fort	12	,,
29th	,,	near	Damul	12	,,
30th	,,	near	Carapettah	10	,,
31st	,,	near	Tirumungulum	6	,,
1st	June	near	Amrambaidoo	2	,,
2d	,,	near	Cowoor	1	,,
23d	,,	at	Fort St. George	1	,,
24th	,,	at	Fort St. George	1	,,
			Total	68	,,

During the first week of this visitation, the epidemic was evidently not recognized by the unfortunate subjects of its attack, for they failed to report themselves, until they were quite beyond the reach of all treatment. This perhaps is to be accounted for, from the unusal form, in which it made its appearance. In many of the cases, even of those which terminated fatally, there was neither vomiting, nor purging, nor spasm, and in some of them, even to the last moment of their existence, there was not a complaint of any kind, except an appalling consciousness of immediately approaching dissolution. In all those cases however, the most important, and perhaps the most peculiar symptom of the

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the disease was present; *the circulation was arrested*, and they had besides, all of them, exactly the appearance of a body drowned, and just taken out of the water; and what is exceedingly remarkable, although so far as I know, hitherto unobserved, the following dissection report would lead strongly to a suspicion, that the immediate cause of death in the epidemic, like the immediate cause of death in drowning, is the want of atmospheric air in the lungs. The weather from the 22d of May, the day the 53d descended into the Carnatic, was intensely hot, ranging in the tents, from a hundred to a hundred and eight degrees of the thermometer, and on the afternoon of that day, there was a violent thunder storm, which overthrew all the tents, and for an hour or two drenched every one in rain. Had this occurred before the epidemic, it no doubt would have been considered a powerful exciting cause of that disease, but the epidemic commenced on the 20th while we were yet on the table land of Mysore, and in a climate comparatively temperate. From what I have seen of the epidemic, I am disposed to consider it as the operation of a peculiar morbid poison, and that the various causes which have been assigned for its production, are nothing more than the exciting causes, which produce the susceptibility necessary for its display, as is well known to be the case in a host of other diseases. No atmospheric vicissitude will account for the appearance of the epidemic; or why did it not appear in the 53d Regiment in 1816, when they performed the same march, in the same month of the year, halted on the same encamping grounds, and were exposed, as far as I am capable of judging, to identically the same exciting causes, including to its utmost extent, the whole range of atmospheric vicissitude. In short atmospheric vicissitude as a cause, having been in operation since the world began, its effect, the Epidemic Cholera, if it were true, ought to have had a corresponding steadiness of existence, and this is notoriously contrary to the fact. And here if it should happily lead to any knowledge of its laws, it is proper to remark that the Epidemic broke out in the 54th Regiment in Fort St. George on the 13th of May, in the 34th Regiment encamped a few miles from Fort St. George on the 14th of May, in the Ships in the Roads about the 15th, and in the 53d Regiment, one hundred and twenty two miles from Fort St. George on the 20th of the same month. My experience in the epidemic has not been sufficiently varied and extensive, to induce me to say much upon the treatment of this disease, but I must not omit mentioning on the one hand, that no case proved fatal, in which two pounds of blood were obtained from the arm, and on the other hand, that after the disease had proceeded to a certain stage, medicine, whether external or internal, had no more effect than it would have had upon a dead body; and finally, to show the awful rapidity of its progress, the epidemic in some instances, appeared to have proceeded to this stage, even within one hour from its attack.

Dissection Report, vide Monthly Return for May last.---In addition to the appearances of the abdominal viscera which have been so often remarked in the fatal cases of Cholera, dissection showed in all that were opened, a remarkable collapse of the lungs, such indeed as it seems difficult to account for upon any other principle, than that of a secretion of some aeri-form fluid within the pleura, more than sufficient to counterbalance the pressure of the atmosphere. The lungs occupied but a small space upon the spine, the thorax appearing almost empty. The dissections were performed within two hours after death.

Surgeon H. Cowen, M. D. Fort St. George, 1st Jan. 1823.

His Majesty's 41st Regiment disembarked on the 8th July 1822, consisting of 590 men, after a voyage from England, of little better than three months, during which time the troops were remarkably healthy, and those cases which did occur, were chiefly inflammatory affections of the chest, two of which terminated in phthisis pulmonalis; both proved fatal shortly after their disembarkation.

The majority of the Regiment, embarked for this country, had been chiefly labourers from the western counties of England; men from 20 to 35 years of age, and from 4 to 12 years service; a description of men best calculated for

Surgeon H. Cowen, M. D. Fort St. George, 1st Jan. 1823.

foreign service, their constitutions being formed, their habits as soldiers being established, and in every respect forming an healthy, active, and effective force.

For three days after the arrival of the Regiment in Fort St. George, the men enjoyed a perfect immunity from every disease; not a case occurred requiring hospital treatment; when, on the night of the 12th the first case of this awful and fatal epidemic, which has so long continued in this country, to make such dreadful ravages, made its appearance. It may be necessary to mention, that in consequence of an Order in Council, and which it was determined should be strictly complied with, from the preceding Regiment having suffered so severely, the sick of all corps on landing are transferred to the garrison hospital, for one fortnight, or, until the surgeon be provided with every necessary article, as bedding, dresses, servants, &c. &c. required for the use of a regimental hospital, the arrangements in this country being totally different from those at home. The cases which did occur from the 12th to 17th were consequently treated in the general hospital under the care of the superintending, and garrison surgeons. Here I had an opportunity of seeing the disease in its different stages, and of observing the practice of those men, who for years, have been in the habit of treating this dreadful malady. This in a great measure relieved the anxiety which a medical officer must naturally experience, landing on the shores of a country, where a disease so rapid in its progress, and so fatal in its termination continues to extend its dreadful ravages, and to which the newly arrived European, full of health and vigor, is of all others the most subject. A fatal and melancholy example, presented itself in the regiment which preceded us, a circumstance which tended in a great measure to depress the spirits of our men, and render them in all probability more susceptible to the disease. On the first appearance of the epidemic the attacks were uncommonly severe, and generally came on without any premonitory symptoms; the night, or towards morning, was the time when the greater number of cases occurred; the patient generally complained of a sensation of heat, or pain in the precordia, accompanied with vomiting, great depression of spirits, anxiety, and general uneasiness; the matter ejected from the stomach generally consisted of its contents, at first mixed with bile, after which, the secretion became vitiated; a fluid resembling thin starch was constantly discharged by vomiting, and frequently passed by stool. The pulse in some instances small and feeble, in others quick and full. The peculiarity of countenance so striking, as fully to characterize the disease; being at first pale and expressive of the greatest anxiety; the features became sharpened, the eyes sunk in their orbits with a dark circle formed round them; the voice feeble and striking, the tongue and mouth dry, with the most insatiable thirst, a never failing symptom, and of all others the most distressing; respiration oppressed and laborious; skin cold, although the patient complains of being burning hot; yet in the advanced stage of the disease, there is a deathlike coldness imparted to the hand, while the whole surface of the body is bedewed with clammy sweats. On the first approach, the spasms of the legs, arms and muscles of the abdomen were so severe as to require several men to keep the patient in bed; as the disease advances these symptoms became more urgent, the thirst distressing beyond description, nor can it be gratified from the state of the stomach, which frequently cannot contain the smallest quantity of liquid; the vomiting and purging increase in frequency; the discharge from the stomach and rectum being of the same kind of fluid, resembling thin rice water; the quantity and force with which this fluid is ejected from the stomach is remarkable. The surface of the body generally gets colder. The artificial application of heat to every part of the body; the vapor and warm baths, fail to restore the natural temperature; notwithstanding the deathlike coldness of the surface, the patient principally complains of burning heat throughout his body, and excessive thirst, which he ardently implores to be gratified. The face and skin assume a dark purple colour, like a person recently drowned; the hands are corrugated, and appear as if they had been immersed in scalding water for several hours; the entire surface of the body becomes bedewed with cold and clammy perspirations; respiration short and laborious; from the commencement, pulse not often to be felt;

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the patient becomes comatose and dies. Such were the general symptoms which presented themselves; scarcely two cases were alike, some one symptom or another predominating; frequently in many, vomiting and purging were the most distressing; in others, there was no vomiting, but constant purging; in all, the distressing symptoms of urgent thirst, and in the severer cases, the never-failing, awful, and too often the unconquerable one, of the circulation being arrested. I have detailed the symptoms of the disease as it occurred during its temporary visit in the Regiment; to enter into its nature, or causes, my experience does not enable me to do; it has prevailed for a long period in this country, and still continues its ravages, among the inhabitants of the Black Town, through every change of season, and alternation of temperature; during the time Cholera prevailed in the Regiment, not a single case of any other disease presented itself; it appeared that the prevalence of the one, superseded the power of every other; and on its subsiding, dysentery rapidly came on; several who were discharged cured of Cholera were re-admitted labouring under colonitis.

The treatment of this formidable disease is as little known, as the nature of the malady itself. From the different reports of the Medical Officers of the three establishments, which have been laid before the Board, nothing satisfactory can be attained; each has his peculiar, and I may say in many instances, opposite modes of treatment; some place all their confidence in bleeding; others in large doses of opium with calomel; while many pour in stimulants, aided by the warm bath, frictions, and blisters. For my own part I was induced to believe, from the assurances of the medical men here, that where two pounds of blood could be obtained in a full stream, the patient was saved; but too often, my hopes of their recovery were found to be delusive, seeing them sink into a state of collapse, without being able by the most powerful stimulants to excite reaction; in many instances bleeding was attended with most decided advantage, and where blood could not be obtained, which occurred in several cases, a most unfavourable result was to be apprehended; in some of the severer ones, the veins of both arms, and jugulars, were opened; the blood came by drops and was of a black colour. Within forty hours after the visitation of this Epidemic, out of nine cases sent to the Garrison Hospital, six proved fatal. Where bleeding cannot be effected, leeches, which in this country are particularly good, and draw off an immense quantity of blood, refuse to perform their office, and actually shrink away from the subject. In every case which occurred when the patient was reported early, and before the circulation became languid, bleeding was had recourse to; about twenty leeches placed over the region of the stomach, and on their removal, a large blister immediately applied. Where great irritability of the stomach prevailed, large doses of laudanum, both in a liquid and solid state, were administered; and during the time the stomach was under the influence of opium, calomel was freely given. Where we were fortunate enough to appease the irritable state of this organ, we had immediate recourse to purgatives, assisted by enemas. To relieve spasms, opiates aided by frictions, and stimulants, with the use of the vapor and warm baths; when the circulation became languid, and the temperature of the body began to sink, hot bricks were applied, and chatties filled with charcoal placed under the cots; constant frictions made use of, with sinapisms applied to the inner part of the legs and soles of the feet. In many cases where collapse rapidly succeeded, to stimulate was impossible. Brandy, wine, camphor and ammonia were largely given, without being able to excite any effect, either on the skin or circulation. In such cases, the most active stimulants were required, and if reaction was not soon effected, a fatal termination shortly ensued. Where the pulse was restored, and the temperature of the body increased, nature soon rallied, and the patient almost immediately recovered.

The appearances on dissection varied in different subjects, and in many instances corresponded with the symptoms which existed during life. In those severe cases in which sudden prostration of strength took place, with extraordinary shrinking of the features, and general collapse of the integuments, the entire

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surface of the body was of a dark, livid, purple colour ; the thorax appeared to be entirely empty, and what might be termed lungs were found lying close to the vertebræ, in a complete state of collapse, each lung not being the size of a small hand, firm in consistence, and when cut into, full of dark venous blood. The brain exhibited marks of congestion, the vessels being distended, and the sinuses filled with fluid. Those inflammatory appearances of the intestines described by authors, were by no means regularly found ; in a few instances, the mucous membrane exhibited patches to the extent of half a crown, where increased vascularity appeared ; in many, the stomach and intestinal canal were distended, and completely filled with a fluid resembling congee water, which the patient during life, constantly discharged, both from the stomach and rectum ; the bladder was constantly found contracted, and empty. In no one case can I bring to my recollection, that it contained the smallest quantity of urine ; nor did the liver and gall bladder evince any signs of disease. Such were the general appearances on dissection ; in some subjects no marks of disease could be traced in any of the viscera, the lungs, stomach and intestines being perfectly natural, leaving the mind still more involved in doubt and obscurity, as to the nature of the disease which caused death in so short a period.

Since the subsidence of Cholera, Fever, Hepatitis, and Dysentry have been the prevailing diseases.

Circular Letter, Secretary Medical Board, dated 18th Oct. 1821.

1st. A DIVERSITY of opinion exists regarding the influence which the state of the blood, in those affected with Cholera, may have in producing some of the symptoms of that disease ; and the Board do not yet possess facts sufficiently numerous, and explicit, to enable them to determine the question. I am desired by them to request, that you will communicate the result of your observations on the subject.

2d. It is especially desirable to know, whether, in every case, and in every stage of the disease, the blood abstracted from a vein was of an uncommonly dark colour ; whether the colour became less dark after a certain quantity had been abstracted ; whether, if the colour thus changed during the bleeding, the prognosis was thence more favourable ; and whether, if you practised arteriotomy, the colour of the arterial blood was natural. It would be satisfactory to know the period from the accession of the disease, at which your remarks on the state of the blood were made.

Surgeon M'Cabe, Poonamallee, 29th Oct. 1821.

IN reply to your letter of the 18th instant, I have the honour to acquaint you, for the information of the Board, that, in every case of the low, or severe form of Cholera, in which venesection was resorted to, the colour of the blood was unusually dark, sometimes approaching to black, and in no instance did I observe it become less dark, whether the quantity abstracted amounted to six, eighteen, or even twenty four ounces. On examining the blood several hours after it had been taken from the arm, the surface was found to retain the dark colour, or at least to have parted with it in a slight degree ; the coagulum was rather dense, and scarcely any serum had separated. In two instances blood taken away at 8 P. M. was fluid at 6 A. M. on the following morning ; and in a third, coagulation, had taken place only partially. The quantity abstracted in these cases did not exceed five or six ounces.

The period at which blood was drawn after the first attack of the disease, at least as far as my inquiries enabled me to ascertain, was from six to twelve hours, certainly never earlier, and probably often much later ; for it not unfrequently happened that the first symptoms were, in many instances, so slight as to pass unnoticed, or to attract little attention for some hours after their accession. An attempt was made on two occasions to take blood from the temporal artery, but it proved ineffectual ; only a few drops of dark blood oozed from the wound in the integuments. Both cases terminated fatally.

Surgeon M'Cabe, Poonamallee, 29th Oct. 1821.

In that form of the disease characterised by a quick, full, and strong pulse, hot skin, severe spasms and retching, the blood, though darker than usual, did not however present any appearance otherwise different from what is generally observed in blood abstracted in the treatment of other disorders. But it is proper to remark here, that the violence of the spasms and retching induced early application for assistance, and hence remedial means were almost always employed in the course of a very short time from the first invasion.

Every case of this description, which fell under my observation, recovered.

Surgeon R. Daun, M.D. H. M. 89th. Regiment Quilon, 29th Oct. 1821.

In reply to your circular letter of the 18th Instant, I have the honor to state.

1st. That in every case of the Epidemic Cholera which has come under my observation, wherein bleeding was employed, the blood was of an uncommonly dark colour, and that this was observed to be the case in every stage of the disorder.

2d. That my patients were bled as soon as reported, which was generally from one, to two, or three hours, from the commencement of the attack.

3d. That in the cases which terminated successfully it was remarked, that the blood, after a certain quantity had been abstracted, began to change its colour, losing its dark colour, and assuming that of healthy venous blood.

4th. That concomitant with this change of colour in the blood, was a more vigorous action of the heart and arteries, as evinced by the rise of the pulse, and by the blood (which at first, flowed with difficulty) beginning to spring in a full stream from the arm.

5th. That I consider this change of colour of the blood, and the encreasing force of the circulation, as warranting a most confident hope of the patient's recovery, in as much as, I have known no case fatal, when they took place.

But where the blood could not be abstracted in sufficient quantity, and continued to the last of a jet black colour, the case has uniformly terminated in death, one instance only excepted.

6th. That I have, in two or three cases, opened the temporal artery without succeeding in getting blood; and that in one instance I cut down upon the brachial artery and opened it, but with no better success; no blood flowed.

The patient now alluded to, it is proper to observe, was at the time almost in articulo mortis; but believing I felt a feeble pulsation of the artery before I began the operation, I was induced to make the attempt, all my efforts to abstract blood from the veins of the neck and arms having failed.

In this case, the patient was cut off in about an hour from the first appearance of indisposition.

He was a soldier of the regiment, and a married man.

His wife was attacked nearly at the same time, and survived him only about an hour.—Both were robust Europeans.

Asst. Surg. Stokes, 31st December 1821.

I have the honor to acknowledge the receipt of your circular letter under date October 18th, which came to me at Vellore on the 24th Instant.

With reference to the enquiry of the Board, as to the influence which the state of the blood in those affected with Cholera, may have in producing some of the symptoms of that disease, I do not possess any satisfactory information on the subject, nor a sufficient number of facts from which a conclusion might be with propriety drawn.

Ass't Surg. Stokes, 31st December 1823.

In the few cases I saw, in which bleeding was used, the blood did not uniformly exhibit the same appearances; there were evident shades of difference observable in its colour, and consistence. Where it was of an uncommonly dark hue, it was thick, and oozed from the orifice in the vein, scarcely in a fluid state—where the color was less black, the blood was much thinner, and flowed in a slow stream. I well remember bleeding a man who was reported to have been seized only two hours before, and the blood flowed moderately free to the extent of about three ounces, when it ceased and no more could be taken—it was in a fluid state, and not much darker than venous blood naturally would have been.

In another case blood was taken as far as fourteen ounces and flowed in a stream, very slow, from both arms; it was thinner than that before mentioned, and its colour was of a lighter red than I have seen some venous blood taken under other circumstances; this case was several hours after the accession of the disease, and died in a few minutes after the operation.

I did not get an opportunity of using bleeding in the commencement of the attack; two hours after its accession being the earliest period; neither did I observe any difference of colour particularly remarkable after a given quantity had been abstracted, nor do I recollect any change of symptom which immediately followed the abstraction of blood; nor was there any difference to be observed in the symptoms of the disease, in those cases in which there was to be observed a difference in the appearances of the blood.

I did not use arteriotomy in any case, and cannot speak as to the appearance of the blood for that reason. The number of cases in which I used bleeding was not considerable, as I was deterred from carrying it to any extent, finding that every case terminated fatally.

Surgeon H. Cowen, M. D. H. M. 41st Regt Madras, 14th March 1823.

In reply to your Circular respecting the state of the blood in those affected with Cholera, I have generally observed it to have been of a dark colour, particularly when the disease had existed any time; it was then with difficulty obtained, came away by drops along the arm, and often was as black as ink; when a change of colour took place, and the stream of blood increased, a more favorable prognosis was expected; this was often obtained by immersing the patient in a warm bath, previously to which, scarcely a drop of blood could be procured.

At the commencement of the disease, and before the circulation becomes arrested, I have seen the blood flow in a full stream, of a bright florid colour, and a favorable result generally ensued; this however in a few instances did not take place, bleeding not arresting the progress of the symptoms, a state of collapse succeeding, which terminated fatally.

From what I have observed in the treatment of the disease, our hopes were generally raised for the safety of the patient, when the colour of the blood became lighter after a certain quantity had been abstracted, when it flowed in a full stream, the pulse at the same time becoming more full, and the temperature of the body increasing.

Surgeon Wyse, 2d November 1821.

My practice in the Epidemic Cholera has not been great, but in reply to your official letter dated 18th October 1821, I have the honor to state, that finding the prescribed treatment of that disease as it appeared at Cannanore in 1818 and 1819, by opiates, combined with large doses of calomel, antispasmodics, stimulants, cordials, and the spirituous vapor bath, very far from being successful, it became my duty to reflect seriously, on the causes of this failure, the nature of the disease, and the symptoms occurring during its progress towards death, which I consider its natural termination; the rationale thence deducible, for its management with a better prospect of success, the propriety, and applicablity of the proposed remedies, and their modus operandi, Surgeon Wyse, 2d November, 1821.

As the proximate cause of this formidable disease, it appeared to me, that there was produced (I know not how), a sudden deficiency of the nervous energy; and, as a natural consequence, that the heart and blood vessels could not propel the blood with that degree of force which is necessary for the maintenance of health. That from these causes, congestion took place, beginning in the right side of the heart, which could not discharge the returning blood in due time, and quantity, through the lungs; and, that the lungs could not sufficiently oxigenate even the diminished quantity that circulated languidly through them, suffering of course, from the defect of nervous power, with the system in general. It is evident that this congestion commencing at the basis of the venal column, must proceed along the course of the larger to the smaller veins, and consequently those of the chylopoetic viscera, neck, and head, must chiefly, and primarily suffer.

The sudden prostration of strength, the suspension of the secretions, the absence of delirium, and all other signs of excitement; the despondency of the mind, the coldness and collapse of the skin, the irregular actions of the muscular fibres, all seem to prove this defect of the nervous power. The oppressed heart, is indicated by the faultering and sinking pulse; the congestion of the veins of the abominal viscera by the sensation of precordial stuffing, heat, weight, or pressure, and often acute pain, and tension.

Now, while this accumulation is in progress, the extreme vessels (exhalants, &c.) partaking of the morbid defect of nervous power, seem unable to resist the unusual pressure and regurgitation; but being too small to transmit the crassamentum and red particles, pour out the serum (thinner parts) only, of the blood into the stomach and bowels, and on the skin; the stomach and bowels being thus inundated, reject the load as often as the stimulus of excessive distention rouses them to action; hence the watery purging, and vomiting by jerks. It is obvious that in a very short time, the crasis of the blood must be dissolved by this process, and accordingly, that part of it which is left in the veins is found viscid, adhesive, dark colored, from mere condensation, as well as probably from a want of oxygen as above surmised. I have not performed arteriotomy, but presume the arterial blood will be found less florid in this disease than in health. Thus the sources of caloric being impaired, while it is rapidly wasted by the liquors exhaled, or rather poured into the alimentary canal, and evaporated from the surface, we cannot be surprized at the increasing coldness of the body and collapse of the skin. It is clear, that under these circumstances, the circulation must soon stop, and death ensue.

If these views be correct, it would seem that, to remove the venal congestion, and rouse the energies of the brain, are the chief indications for a cure.

Venesection, early, copious, quick, is the remedy best suited to remove the former, by instantly relieving the pressure a tergo. Diffusive or general, and local stimulants, frictions of the skin performed by hot and dry substances, seem best adapted to the other.

Every moist vaporizable thing must tend to dissipate the heat already too low, and is so far injurious; but to surround *with carbonic acid gas*, a patient whose lungs are probably in such a state, that they could not extract from pure oxygen gas, enough of its basis for the purposes of life, is, to say the least, extremely injudicious. On these grounds I objected to the employment of the spirituous vapor bath in 1818, after a very short trial, and have the satisfaction to find by a late circular, that they are approved of by the Medical Board.

In all cases where I could get the blood to flow, its abstraction gave sudden relief, particularly to the prœcordial oppression, and revived the pulse. I cannot say that I observed any *sudden* good effects from large doses of calomel; but think it useful as an auxiliary, in conducing to equalize the circulation, and renew the secretions.

SURGEON WYSE, 2D NOVEMBER 1821.

I have seen injurious effects from excessive doses of laudanum, viz. a most distressing increase of thirst, and jactitation; but in guardedly moderate doses, it must be useful as a diffusive stimulant, anti-irritative, and powerful anti-spasmodic, particularly after bleeding.

After removing the first most pressing danger, by prompt and decisive measures as above, I have not found it difficult to complete the cure; in effecting which, my attention has been directed towards the restoration of the natural, secretions, and excretions, alvine and urinary.

From these premises, the Board will see, that I considered the altered state of the blood as a sequel, or effect, of the disease; but if I mistake not, it is the proximate cause of its fatal termination, by becoming so inspissated, as to be immoveable by the languid heart.

To these conclusions I have been guided, by the following, and other similar facts.

On the second visitation of Cannanore by the epidemic, it was almost exclusively confined to the prisoners in the jail of the Zillah Court of Tellicherry, in that fort. This jail was under Mr. Dyer's medical charge, but his station was distant 13 miles, and in cases of emergency, I was called in. Nine or ten patients had died very suddenly, who were treated with large doses of laudanum, and calomel, stimulants, frictions, and blisters. In my last visit two patients were ill; one had just been seized, the other had been sick for ten or eleven hours. The pulse was very obscure in both, but scarcely perceptible in the latter. The blood flowed freely, and of natural quality from the former, who, after the operation, wished to join his comrades in irons, at work. From the other, about 6 or 7 ounces of thick, tar like blood was drawn with difficulty, but with much relief to the precordial oppression, and he returned to work in two or three days, after the use of a mercurial aperient, &c. I noticed these cases in my official returns at the time.

An inhabitant of the town was about this time brought to me; the pulse was lost; I opened two veins in his arms, but (except a few drops) no blood would quit them; these were dark and viscid. This man died.

During my late charge of the Royal Scots, 5 cases (Europeans) occurred. Three were saved, two died. One being bled almost immediately when attacked, the blood seemed natural; he recovered. This man's case has been recorded to the Board. I thought a clyster of ol. terebinth. rect. useful in urging the circulation into the extreme vessels. A few days afterwards two men were brought from the barracks at 7 A. M.; one had been ill from midnight; the other not more than an hour. They were both bled: the blood of the former was dark colored, and viscid, and would not flow; he died in two or three hours—Venesection gave the other immediate relief, for the blood althourgh dark, viscid, and sluggish, still flowed. He returned in a short time to his duty.

Soon afterwards another was taken ill in the barracks: When brought to the hospital, although several veins were opened in both arms, very little blood came away, and that was dark, and viscid. The turpentine enema seemed injurious in this case, causing great jactitation, and acute pain in the abdomen. In this man the animal heat after several hours application of heated flannel to his trunk, and limbs, returned, and rose to the highest degree which it reaches in great febrile excitement; but even in this state of re-action, although the pulse became strong, and a general flush of the skin took place, as if the circulation had been more than restored, the blood would not leave his veins. He died in agony.

The last was also treated by premising venesection; the blood was apparently in the act of blackening, and inspissation, but flowed readily. He recovered.

Surgeon Wyse, 29 November, 1821.

A recent case (M'Namara, gunner) transmitted to the Board with my last month's returns, it will be perceived, is strongly illustrative of the preceding observations. He fell into syncope while I applied the bandage for venesection, but I was not deterred, trusting to my former experience, that if the blood could be drawn, he had a chance, the only chance I may say, of resuscitation; it was dark, viscid, sluggish and hardly flowed; by perseverance 21 ounces were extracted, and thus, the weight which compressed the springs of life,

> "Cramped the vital parts,
> "And robb'd the fine machinery of its play,"

was removed, and a speedy recovery took place. In those whom I had an opportunity of inspecting after death, the engorgement of the blood vessels of the omentum, stomach, intestines, and mysentery, &c. was such, that I am confident no medical man who saw them, could entertain the smallest doubt of the necessity of early, quick, and copious bleeding. Indeed, from the result of my practice, (confessedly not extensive), I am inclined to consider the abstraction of blood as, generally speaking, decisive of the patient's fate.

In all cases where it can be drawn, (the quicker the better,) I should form the most favourable prognosis, and vice versa.

If I have been more diffuse than the purport of the Board's letter would seem to warrant, I have, added to the importance of the subject, to urge in my justification, the wish to be thoroughly understood.

Circular Letter, Secretary Medical Board, dated 13th March 1823.

Dr. Tytler of the Bengal Establishment having advanced an opinion, which he still supports, that the Epidemic Cholera is caused by eating noxious rice, the Medical Board are led to expect that the fatal attack of the disease which was experienced last year in your Corps may afford an opportunity of setting the question at rest, by *positive evidence*—They accordingly request, that you will endeavour, by a reference to the cases, and by strictly questioning a number of the men who suffered from the disease, as to their having used, or not used, rice of any description, from the time of reaching Madras Roads, to that of their being taken ill, to ascertain the facts of the case, and report thereon for their information.

Surgeon H. Cowen, M. D. H. M. 41st Regt. Fort St. George, 14th March 1823.

In reply to your's of the 13th instant, respecting the opinion of Dr. Tytler relative to the Epidemic Cholera, being caused by eating noxious rice, I beg leave to state, that on referring to those men who laboured under the disease, and questioning them relative to their diet, I have ascertained that scarcely any had made use of rice. The first division which landed on the 8th July, having been on batta for ten days after their arrival, and the second which disembarked on the 17th, being on the same diet, viz. bread, beef and potatoes, for three days. During the first fortnight I can positively assert there was no rice used, and as far as I have been able to ascertain, it was six weeks or two months before it came into general use; long before which, the epidemic entirely disappeared.

That noxious vegetable matter may produce disease I have no doubt, in this instance it must be attributed to some more powerful cause; many of the second division having been attacked with the disease, on the morning of their arrival, and fell victims to its malignancy, during the day.

Surgeon C. Hamilton, H. M. 54th Regt. Bangalore, 21st March 1823.

In compliance with the wish of the Medical Board to obtain correct information how far noxious rice may have operated in producing the late severe visitation of spasmodic Cholera experienced in H. M. 54th Regiment, I have instituted a most minute inquiry on the subject, and beg leave to submit the following as the result.

There are now at the Head Quarters of the Regiment eighty-five men who suffered an attack of Cholera while in Fort St. George; who have been separately and distinctly questioned as to their diet, and whether they were in the habit

Surgeon C. Hamilton, H. M. 54th Regt Bangalore, 21st March 1823.

of using rice, either with curry and soup, pudding or in any shape whatever; of these men, there are only ten who state, that they eat rice at any time previously to marching from the Fort on the 4th June, and a great majority of the others declare, that up to the present time they have never used rice, from dislike to that article of food.

Among these men there are very many of the best character, and several non-commissioned officers, upon whose veracity I am disposed to place the firmest reliance; and in order to afford the Board the fullest elucidation on the subject, I herewith subjoin a scale of the messing of the soldiers while at Madras.

1 pound of Beef		Dinner.
1¾ pound of Bread		
For Vegetables for Soup	20 Cash.	
Butter....	20 Cash.	Breakfast.
Tea and Sugar...	40 Cash.	

By this scale it is evident, that rice did not enter into any part of their diet, and the Board are of course sufficiently aware of the habits of European soldiers, to know that their balances, after messing and purchase of necessaries, are usually expended on much more deleterious articles than rice. In addition to the foregoing evidence I have questioned several of the Pay Serjeants, and others, on whose word every confidence may be placed, and their answers have been uniform, that, with the exception of a few married people who are indulged in living by themselves, they never saw rice used while in the Fort. Under any other circumstances than those in which I was placed, I should have been able to add my personal observation on the subject, having been always in the habit of frequently inspecting the men's messes, but the pressure of duty which devolved on me during the continuance of the Epidemic, rendered this duty impossible.

Having now laid before the Board the information required, I trust it will be found conclusive, and that they will do me the justice to believe, that the investigation was conducted with the strictest impartiality; indeed, it could scarcely be otherwise, as I had formed no theory to bias me, nor hypothesis to advance. Most of the men also were examined in presence of Mr. Assistant Surgeon Roland, H. C. S. at present doing duty with me.

Assistant Surgeon Kruikshanks, 24th July, 1823.

In reply to your letter of the 10th instant, I have the pleasure to give you what information I am able, at this distant period, regarding the Epidemic which prevailed in the 1st Battalion 9th Regiment N. I. when on their march from Jaulnah to Trichinopoly, in 1814.

1814.

A brigade, composed of the 2d Battalion 5th Regiment, and 1st Battalion 9th Regiment marched from Jaulnah on the 29th of May 1814.

It is necessary to apprize you that, standing appointed to the 2d Battalion 3d Regiment N. I. stationed at Vellore, I took advantage of the march of the brigade from Jaulnah, to accompany it towards Hyderabad; but, finding it proceed with less expedition than was suitable to my objects, I moved on in front; and on Mr. Duncan being ordered back to Jaulnah, I was recalled by the officer commanding the force, to afford medical aid to the 9th Regiment, at that time expected to be separated from the 5th Regiment at Hyderabad, although, eventually, both corps proceeded together as far as Kurnool. I returned on receiving the order, and arrived in Camp at Sadashapet on the 18th of June 1814.

The weather had been extremely hot, and in the tents of the privates it was nearly insupportable; the thermometer in my own tent rising to 106 at 2 P. M On the 7th of June we had heavy rain; it commenced about the hour the brigade marched, and continued with little interruption until we came upon our ground; the clothes of men and officers, and the baggage of the former, were

Assistant Surgeon Kruikshanks, 24th July 1823.
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completely drenched. After this rain, the temperature became for a few days remarkably lowered, but soon returned to the same intensity which prevailed when our march commenced. On the 13th of June there was a succession of showers, by which the temperature was a second time very suddenly lowered, the thermometer standing at 2 P. M. at 85, and at day break being as low as 64. The wind which had formerly blown in hot scorching gusts and squalls, became now steadily cold and damp, blowing from W. S. W. to N. N. W. Few of the Officers, however well clothed and sheltered, escaped from feeling its effects in rheumatic pains of the joints, or in catarrhal symptoms, or in some affection of the bowels.

Although absent when the disease first appeared in Camp, I believe that I can with tolerable certainty affirm, that the first case of Cholera occurred at Sungum on the, 14th of June ; I am unable to state what number of cases of the disease remained in hospital on my receiving medical charge, but I think that they did not amount to more than five.

The first cases of Cholera which I witnessed, occurred at Kundee on the 19th June, in certain old persons, relations of the sepoys, who, on the corps coming to its ground, were reported to have been left in the rear, and to be unable to proceed. Doolies were sent back to bring them up ; when taken to the hospital, they exhibited all those symptoms, now so well known, of persons labouring under the advanced and fatal stage of Epidemic Cholera ; the skin cold and covered with cold perspiration ; the extremities shrivelled, cold and damp ; the eyes sunk, fixed, and glassy ; and the pulse not to be felt. These persons all died, and I find on referring to such notes as I have preserved, that influenced by consideration of the vascular collapse, and total absence of arterial pulsation, I had denominated the disease asphyxia.

Many sepoys were brought into hospital in circumstances approaching to those above related ; of these, in a considerable proportion, the disease terminated fatally.

Thus, the cases which I first saw of this malady, in the aged and among the camp followers, differed in no respect from the worst cases of that affection, since so well known under the name of Spasmodic Cholera. That name however I did not adopt, neither in my public reports, nor in the private notes which I took at the time. In this I was chiefly influenced from considering the nature of the matter ejected by vomiting and by stool, which, in cholera, is said to consist of bile, but which in these cases, was aqueous or mucilaginous. Besides, it was evident that the diluent treatment recommended in cholera could never be applicable to such a disease as that with which I had to contend. I continued therefore to employ in my reports the term *bowel complaint*, both because I found it in the hospital books on joining the corps, and because, if it conveyed no very precise ideas of the malady which it was meant to designate, it was at least an appellation whence no erroneous impressions could be derived.

Sepoys, when attacked, were usually brought to the hospital at more early periods than camp followers; while the skin continued to retain some share of natural temparature, before the circulation was totally oppressed, while the eye and other organs of the external senses remained sensible, and observant of surrounding objects : yet many sepoys were prevented by circumstances from making early application, and presented themselves at the hospital in the last and most deplorable period of the disease. Even in incipient cases, and those treated in the most favourable stage, more instances occurred of danger from the secondary symptoms, those of re-action, than have usually been remarked among natives during the late epidemic. After the first symptoms had subsided, after the muscular pains were removed, and a healthy temperature had returned to the skin, a degree of fever not unusually arose; the stools assumed a green colour, and were accompanied by tenesmus, mucus and blood ; and some patients were cut off at a very advanced period of the disease, by the ordinary symptoms of dysentery.

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Such as were saved in these circumstances owed their recovery to the usual treatment of dysentery, by gentle purgatives at first, followed by ipecacuanha and opium, and in the second place, if necessary, by inducing ptyalism with all possible expedition.

In the first stage of this epidemic calomel was not administered, neither was blood letting had recourse to. Opium was given both in large doses, and in small doses, repeated at short intervals; but the chief reliance was in alcohol. This remedy was administered in very large doses, in much larger indeed than, in the late epidemic, I have found safe or expedient. Whether any difference in the constitution of the epidemic led me to give spirits in so large doses, or whether the article itself might not be of inferior quality, I am unable to say; but I found the best effects to follow a draught of ℥iv. of arrack given on the admission of the sick.

On joining the corps I found that hot sand was the external application in common use in the hospital, and I seldom employed any other. I am now accustomed to prefer hot salt to all other external stimulants, and to all other forms of applying heat. This practice I have extended from Cholera to all cases of muscular and local pain, neuralgia, odontalgia and the like. It is an application commonly used by the natives, in the administration of which they require no instruction; in which they themselves place considerable reliance; and in the assiduous employment of which, they may therefore be trusted. I believe that whoever will resort to its use will experience in it a topical application of no mean efficacy. I have no doubt but that nitric acid, which has lately been proposed as a substitute for cantharides, may sometimes be found of service: unfortunately it is little adapted to the circumstances of this country, the acid furnished from the Medical Stores, although quite sufficient for all purposes of internal use, being too much diluted to cause vesication on the skin of a native, or indeed, to cause much irritation of any skin.*

I have noticed the sudden changes of temperature, to which the force was exposed, as likely to produce effects injurious to health; but on this occasion other causes of disease were not wanting, and those of a kind more exclusively affecting the native part of the force. Jaulnah, where the brigade had been for some years in cantonment, is a country nearly destitute of wood. Fruit of all kinds is sold at a very high price, and so is placed beyond the reach of the sepoy. Toddy is brought from a distance of two or three days journey, for the purpose only of fermenting bread. About the 16th of June, just as the weather became cold, we got into a country abounding in mango and date trees: toddy from the latter, and mangoes, were procured for the merest trifle, and consumed in abundance by all ranks in camp.

The common food of the sepoys, for several years, had been bread formed without fermentation, from seeds of jowary, and of other dry grains, which abound at Jaulnah. Bread formed from these is dry, constipating, impressing upon the tongue and fauces a taste almost styptic. Rice, at Jaulnah, is of high price and consumed in small quantity. As we approached to Hyderabad, the value and consumption of those articles of food underwent a remarkable change; the cultivation of jowary became less, and its price increased in the bazar; while the value of rice decreased, as its cultivation became more extended. The common food of the sepoy necessarily changed, as bread increased, and rice diminished in price; and from an article of diet, whereof a remarkably small bulk satisfies the wants of the stomach, and gives consistence to the fæces, he had recourse to rice, of which perhaps a larger quantity may be taken into the stomach than of any other sub-

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* The sp. gr. of the Nitric Acid is 1,300; it is consequently abundantly strong for external application. The acid however, does not vesicate, or raise the cuticle, like cantharides, or boiling water; and in cases of Cholera, the skin is often quite insensible to the action of any chemical agent. See remarks on the acid blister, page   ED.

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stance, and which communicates to the stools of those who feed on it, a form of peculiar liquidity.

Animal food, beef and mutton particularly, is of better quality and lower price at Jaulnah than perhaps at any other military station under the Presidency of Madras: it was very generally eaten by the sepoys. On the march towards Hyderabad these articles increased in price. The sepoys were accompanied by their families; they had their baggage with them, and bullocks for its conveyance. Forage was supplied from the villages at a most extravagant price, and the pay of the sepoys was exhausted in feeding their cattle. Animal food therefore they were compelled entirely to disuse, and to subsist on boiled rice and vegetables, or cheat the immediate cravings of the stomach by the fermented juice of the date tree.

To none of those causes of disease, which I have enumerated, did the natives themselves attribute the sickness and mortality which prevailed; and on considering, that of two battalions composing the brigade, alike exposed to all those causes, one only suffered from the Epidemic, while the hospital of the 5th N. I. exhibited not a single case of analogous disease, those adduced can only be regarded in the light of remote, or of predisposing causes, while something or other, acting exclusively on one battalion, must be sought for, as instrumental in exciting the malady.

In relation to certain doctrines which have been proposed in Bengal, it will not be overlooked that on this occasion the food consumed in camp was suddenly changed from dry grain, to rice; but as neither will this explain why the disease was limited and confined to one out of two battalions, alike subjected to the change; so, the sudden change of grain sold to the force, can only be admitted as one, out of many predisposing causes of disease.

It was the belief of the natives, strenuously fostered and inculcated by their spiritual guides, that the Epidemic was the immediate consequence of the wrath of heaven, outraged and insulted by the pollution of certain sacred tanks, situated at the village of Cunnatore,* in which sepoys of low cast, and camp followers, had indiscriminately bathed. Such we may not regard as affording a very satisfactory solution of the difficulty; yet it leads, I think, directly to the true point of enquiry. At Cunnatore the force was so encamped, that while the 5th N. I. on the right, had their supplies of water from wells, the puckallies of the 9th N.I. procured water for that Battalion from tanks, situated on low ground, on the left of the line. The fact that the disease first broke forth in a day or two after passing Cunnatore; the prevailing opinion of the natives that it originated there; and, that somehow it was connected with the tanks; a desire to discover some one cause confined in its influence and operation to one out of the two battalions; lastly the difficulty or impossibility of lighting on any other; all those led to enquiry; and to ascertaining with a considerable degree of certainty, that each battalion was supplied with water from a source distinct from the other.

I ought to have noticed that Cholera did not prevail at Cunnatore previously to the arrival of the troops, nor in any of the villages between Cunnatore and Hyderabad; nor was it eventually communicated by the troops to the villagers. The disease originated in, and was confined to the 1st Battalion 9th Regiment, not even extending to the battalion which marched, and was encamped along with it.

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* Cunnatore, otherwise written Cunnapore, is a large village, about fourteen miles to the westward of Beder. It is a place of considerable sanctity, and possesses a Pagoda larger and more entire than is usually met with in the Nizam's dominions. It abounds in large and substantial dwelling houses, occupied chiefly by Bramins, who compose a great proportion of its population. Besides its pagoda, the village of Cunnatore is noted for its bridge, its stone tanks, its mango topes, its excellent roads, its fertile soil and extensive cultivation. Sungum, where the disease first appeared, is two days march south of Cunnatore.

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I am unwilling in this place to enter at much length into an enquiry how the water of those tanks became changed in its nature and properties; how it became so altered from its ordinary state as to have acquired the capacity of exciting a peculiar and specific disease in those drinking of it: nor am I willing to pursue a disquisition so vain and inconclusive as all discussions relating to proximate causes usually are. I may however be permitted to suggest, that sufficient analogy subsists between the early symptoms of cholera, and those of animal poisons, to authorise a conjecture, that the water of the tanks might have somehow become contaminated by certain unknown animal impregnations.

On the brigade arriving at Secunderabad, the 9th N. I. was encamped separately from the other corps, in which sickness did not prevail, and indeed at my own suggestion, on the dryest and most elevated spot that could be found. The battalion continued to occupy this high ground until the disease abated. Farther experience of cholera has led me to conclude that the selection of encamping ground was improper and injudicious, and should I be again placed in similar circumstances, I would in preference recommend that the hospital tents should be pitched in a warm and sheltered spot, with an aspect open to the first rays of the morning sun.

Before leaving the vicinity of Hyderabad, such cases has had recovered from cholera, and were yet unable to proceed, were transferred to the general hospital at Secunderabad. The force moved onwards to Sherompilly on the 1st of July, and here the history of cholera properly ends, although a few mild and modified cases of the disease continued to occur, during some part of our progress.

The month of July, and the early part of August, is the season in which rain chiefly falls in that part of the country through which our route lay; the rivers were swoln, the roads broken up, and the supplies furnished to the troops were both scanty and of indifferent quality. From these causes there arose in camp a a bowel complaint, affecting alike the men of both corps, and having apparently no relation to the previous epidemic. This bowel complaint appeared, at first, in the guise of a common diarrhœa, was tolerably manageable, and gave way to purgatives, and the chalk mixture. On the 11th of July the force arrived at Paungal, on the left bank of the Kistna, where we were for two days detained by the floods, under incessant rain, and did not reach Kurnool before the 22d, although the distance is usually accomplished in two marches. Many cattle perished in crossing the rivers Kistna and Toomboodra, and the baggage of the men, in every case, sustained damage, and in some instances was totally lost. The rains continued incessant; the sun did not once break forth to dry the tents, nor the ground on which we successively encamped. In subjects thus predisposed to disease by long subjection to damp, cold, and various privations, the bowel complaint became gradually more obstinate, and towards August assumed the decided dysenteric character; the dejections became fetid, watery, stained with blood, and voided with much pain, and the interval between the evacuations rendered intolerable, by incessant inclination to repeat them. To these symptoms were superadded thirst and fever; but the distinguishing marks of the previous epidemic were entirely wanting.

I hope that this hasty sketch of Epidemic Cholera as it prevailed in the 9th N. I. may afford you the information which you require. If any point of importance has been overlooked, I shall be most happy to reply to whatever queries you may propose, so far as my recollection or the imperfect state of my notes may enable me,

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End of the Reports.

EXTRACTS

FROM THE

RECORDS OF THE MEDICAL BOARD,

AND SOME

MISCELLANEOUS PAPERS.

Medical Board, 29th Nov. 1737.

A DISEASE having in October last prevailed at Arcot, similar to an Endemic that raged amongst the Natives about Paliconda in the Amboor valley, in 1769-1770; in an army of observation in January 1783; and the Bengal Detachment at Ganjam in 1781; and several other places at different times; as well as Epidemic over the whole Coast in 1783, under the appearance of Dysentery, Cholera Morbus, or Mordixyan, but attended with spasms at the præcordia, and sudden prostration of strength, as characteristic marks:

Seeing, this Board is ordered to be a Board of Record, the Physician General recommends, as a guide to future practitioners, that a letter from Mr. Thompson, Surgeon of the 4th Regiment, containing an account of the dissection of one of the patients, who died of the disease, describing the state of the viscera, may be entered on the face of the proceedings; together with two letters from Mr. Duffin, Head Surgeon at Vellore; and one from Mr. Davis, Member of the Hospital Board, containing an account of the causes, symptoms, and successful treatment of the sick, by the use of the hot bath and fomentations, supporting the vis vitæ with wine, &c., and removing the putrid colluvies from the intestines:

The Hospital Board, sensible of the advantages that may result to the service from the mode proposed by the Physician General, direct their Secretary to enter the letters he has mentioned, as follows.

Mr. Andrew Berry,
Secretary to the Hospital Board.

Mr. Duffin, Arcot 28th Oct. 1737.

Sir,—I returned yesterday from Arcot, where I had an opportunity of seeing the situation of the sick—The Cholera Morbus rages with great violence, with every symptom of putrescency, and so rapid in its progress, that many of the men are carried off in twelve hours illness. I have recommended to Mr. Pringle, who is indefatigable, the free use of castor oil, which I have found the only effectual remedy in like cases; repeating it whenever the spasms return, and during its operation; allowing the patient to drink liberally of warm wine and water, mulled wine—or in great depression and prostration of strength, warm brandy and water; constant fomentations to the abdomen, or what is better, the warm bath; whilst the spine is rubbed with a solution of opium in warm brandy.

I have had many cases under my care, which were mostly treated in the manner I have described, and I am happy to say, I scarce ever lost a man. As the disease is an accumulation of highly putrid bile, which acts on the system like the most deleterious poison, the first intention is to evacuate it as speedily as possible; and I have found no medicine equal to the castor oil, as it carries off the putrid colluvies without irritating the intestinal canal, which even the mildest purgatives in some measure do; whereas the oil sheaths the internal coats and blunts of irritating matter;—I have always observed the spasms to abate when the oil has operated; but frequently, it is necessary to repeat the dose two or three times, in

Mr. Duffin, Arcot, 2th Oct. 1787.

a day, when the spasms return opiates, which in most cases, when the nervous system is affected, are found useful; but in the Cholera they ought to be used with great caution, and never whilst there is the least apprehension of putridity; and as long as the spasms continue, there is a certainty of offending matter in the primæ viæ, which if locked up by the opiates, even for one hour, too often a fatal mortification ensues.

I have thus thrown together my suggestions on the prevailing disease, and mode of treatment, which I submit to the superior judgment of the Hospital Board; but as Mr. Davis will be shortly at Arcot, he will be able to communicate, more minutely, the state of the sick, and I hope more satisfactorily respecting the treatment of their complaints.

Mr. Fergusson returned from Wallajahbad two days ago, and has relieved Mr. Pringle from an immensity of fatigue, both of body and mind. I understand Colonel Kelly proposes moving the effectives to some Choultries at Trivallum, north of the river, which I think is a very necessary and prudent measure, as both barracks and hospital are become very offensive, and certainly tend to spread the contagion.

I had not an opportunity of speaking to him on the subject, as he removed some days ago with his family to Timmury, to avoid the infection; but I recommended the place to his Quarter Master, and begged him to acquaint the Colonel.

P. S.—Since my return to Vellore we have had six men seized with the Cholera, attended with violent spasms; they are now on the recovery; the second dose of the oil freed them entirely, of every alarming symptom.

Mr Duffin, Vellore, 3d Nov. 1787.

To James Anderson, Esq M. D.
Physician General.

Dear Sir,—I received your Letter of the 30th ultimo, and am very thankful for the judicious suggestions therein, and the open and candid manner in which you have explained your sentiments on the prevailing disease.

In my letter to Mr. Berry which you mention, I thought it no further necessary than saying in general terms, that the disorder at Arcot, was the Cholera Morbus, whose symptoms, unless there were something unusual in them, I thought it unnecessary to discriminate; but as you very justly observe, it is the business of the faculty to trace out the causes, which being determined, the removal of the disease becomes easy; having been deficient in my first letter on that head, I beg leave to offer my sentiments on the predisposing causes of the Cholera, now so epidemical.

The moist and warm atmosphere so prevalent all the month of September in the day time, and the thick fogs which rose every evening, with putrid exhalations from filth, which shamefully abounded at Arcot, attended towards morning with cold heavy dews, which check perspiration, doubtless all tended to bring on an irregularity, and putrescency of the different secretions; and as bad air has a great influence on the stomach and intestines, it generally occasions a loathing and indigestion. Excesses therefore of either eating or drinking, or undue mixtures in the stomach, will often bring on the Cholera, in such a situation. That the private men and natives are more subject to the disease, from their mode of living, than the officers, whose diet and lodging are better, is very evident; yet such has been the noxious quality of the air at Arcot, that we have fatal experience of every precaution being insufficient to exempt from the infection. The removal therefore of both sick and well from the deleterious miasmata became the first object, and which I recommended to be done when I visited the place. The symptoms were generally pretty much the same in all I have seen; only, the violence of the spasms were greater, accord-

Mr. Duffin. Vellore. 3d. November 1787.

ing to the stamina of the patient, and the quantity of putrid matter in the primæ viæ. They generally are seized with a nausea, frequent heats and chills, a dryness of the skin, and numbness, and uncommon sensation, as they express it, in different parts of their body. Then come on, cold sweats, severe gripings, and mostly a purging of bilious colluvies, appearing often in a ferment like yeast and not unlike it in colour, with a putrid offensive smell; reachings to vomit, often bilious, and at other times, scarce any thing is brought up, but the liquor that is drunk; an intense thirst, oppression on the præcordia, with difficulty in breathing; frequently, the spasms begin with the first attack, though sometimes they only appear as the disease advances, and then generally affect the lower extremities; afterwards the abdominal muscles, and the whole system become convulsed; the pulse from the first sinks, and at times is scarcely to be felt; profuse clammy cold sweats, and a pallid hue overspread the body, the countenance ghastly, the eyes sunk, and the voice scarcely to be heard; with great dejection. The tongue in general moist, till near the close of the disease, when it becomes dry and foul, and the breath offensive; the urine generally pale, and in small quantity.

The severe gripings, and the putrid evacuations shew a morbid matter in the intestinal canal which nature is struggling to get rid of; and till it is evacuated, antispasmodics and cordials can be of little use, farther than supporting the patient during the operation of the purge; as a cordial therefore, warm wine is all that I found necessary; the hot baths are of the most essential use; with partial frictions and fomentations, and pots of boiling water placed under the cots; purging glysters are also very necessary.

There is not a doubt that the noxious air acts as a ferment to the bile and gastric juices, already diseased, and occasions those dreadful symptoms I have described, similar in some measure to what sometimes happens, by verdigrease, mixed with food, dressed in copper vessels; I therefore think with submission, that mere inanition, atonia and irritation may be accounted for, without looking for remote causes; and those horripelations, and stupor, from which the patient slowly recovers, are occasioned by the use of opiates in the first stage of the disease. Vomits I think unnecessary in most cases; the stomach in general is too much irritated, and they add to the spasms, without carrying off much of the morbid matter. As I have already in my former letter mentioned the practice in use here, and the success attending it, I shall only beg leave to transmit Mr. Pringle's letter, the day before Mr. Davis arrived, to shew the benefit the sick had received from the free use of castor oil, the short time I had been with them; and I am sorry to say we have had these two days past, too much occasion for the use of it; last evening, no less than 13 men were seized with the Cholera, many of them on the parade, and on the different guards, as well as in the barracks; some by the time they were carried to the hospital were much convulsed, and scarce able to speak; they are all however at this period, out of danger, and the spasms entirely left them. Every precaution is taken by the Commanding Officer to have the men's barracks and privies kept clean, which I hope will be a means of the disorder not raging with such violence as it has done at Arcot; but there is something in the air, which I cannot describe; nor the sensation it occasions, in the evening particularly, which both officers and men, indeed every one in the place, are sensible of; a cold damp chill pervades the whole body, and a listlessness and want of appetite is complained of by all—we have every reason to wish for the setting in of the rains, which alone will free us of the noxious miasmata.

I have thus, my dear sir, laid my sentiments before you, without any reserve; and knowing your candour and liberal way of thinking, I have not hesitated in giving my opinion, even where it should differ from such respectable authority as your own, being persuaded you would rather encourage enquiry, than damp the endeavours of those who wish to benefit by your advice and instruction.

Since I began this letter, I have been called away to see Lieutenant Taylor of the 21st Battalion, who is attacked with the Cholera; I have given

Mr. Duffin, Arcot 3d Nov. 1787.

him a dose of the castor oil, which I hope will put a stop to the spasms getting to any height. We have this day 128 men in the hospital, between thirty and forty of whom came in with the Cholera.

I shall take the liberty of writing you occasionally, should any unusual symptom appear, to request your advice; if the disorder continues, I fear we shall have occasion for more medical help, than we have at present; but I hope the best, and that we shall be able to get through it.

P. S.—I have this moment received a summons to visit Captain Multh at Trivallum, where the 4th Regiment is now moved to, but from the account I have of him, I fear I shall be too late; my stay can only be a few hours, as we have too much on our hands in Vellore.

JAMES ANDERSON, Esq. M. D.
Physician General.

Mr. M. Thompson, Arcot, 5th Nov. 1787.

Dear Sir,—I arrived here on Friday, about 12 o'clock in the forenoon, and immediately waited on Mr. Davis, who I found at Captain Young's in the Cavalry lines. Mr. Davis informed me, that Mr. Lord was in charge of the regiment at Trivallum (about 8 miles N. west of Arcot) in a high and dry situation; the pagoda, in which the men are lodged, is said to be large enough to contain 500 men.

Yesterday morning a private of the 4th Regiment European Infantry, died in the hospital in the Fort of Arcot, when I immediately opened his body, in presence of Messrs. Fergusson, Campbell, and Cameron; the appearances on dissection were; the gall bladder exceedingly distended with bile, so much so, as to appear protruded some inches below the liver, and to contain near six ounces of bile; no marks of putrescence in any of the abdominal viscera; the urinary bladder quite empty, and contracted to the size of walnut; the stomach and duodenum both empty of bile, and no appearance of inflammation in any part of the intestinal canal, or peritoneum. I have not as yet had an opportunity of treating a patient in this spasmodic affection, (from the first seizure), since my arrival here, but shall minute down the effects of the different remedies made use of for the relief of such as may be taken ill of this disease.

Captain Multh of the 4th Regiment Infantry died in 12 hours illness; he had greatly fatigued himself in shooting, on the day in which he was taken ill, and had been under a course of mercury, as well as Mr. Pringle, late Surgeon to the Regiment.

This disease is exactly the same as prevailed at Trincomallee in the months of April and May 1782, when the season was very hot and chill, the winds blowing from the land. and reaching some leagues out to sea; the weather here at present is the same as I experienced at Trincomallee.

TO JAMES ANDERSON, Esq. M. D.
Physician General.

Dr Davies, 29th Nov. 1787.

Sir,—I take occasion to represent, that upon my arrival at Arcot on the 29th ultimo, I found, in what was called the epidemic hospital; three different diseases, viz. patients labouring under the Cholera Morbus; an inflammatory fever with universal cramps; and a spasmodic affection of the nervous system, distinct from the Cholera Morbus. I understood, from the Regimental Surgeon, that the last disease had proved fatal to all who had been attacked with it, and that he had already lost seven and twenty men of the Regiment, in a few days.

Five patients were then shewn me, with scarce any circulation whatever to be discovered; their eyes much sunk within their orbits, their jaws apparently sett, their bodies universally cold, except at the præcordia, and their extremities livid: Mr Pringle observed that these five men were attacked on the 26th, Mr. Duffin had seen them, and had recommended castor oil to be administered, fomentations, frictions, and a chatty of hot coals to be put under each man's cot; the oil had not operated but was rejected by the stomach: he then administered hot wine with spices, observing at the same time that *one* and *all* of those men seemed somewhat relieved by these means; but that in the course of the last night the *spasms* had returned, and the patients were reduced to the state I then saw them.

Dr. Davies, 29th Nov. 1787.

Previous to my interrogating Mr. Pringle as to his general intention of relief in these cases, I directed that five arrack casks should have their heads taken out immediately, and large quantities of hot water be prepared, and without loss of time impregnated with arrack (and such aromatic herbs as could be procured), in the proportion of *one* gallon to *ten*, and to put one and all of these five objects into as hot a bath, as I myself could bear; directed them to be rubbed with strong manual frictions whilst they were in the bath; the good effects of which was so obvious in *three* of the *five*, that in the space of ten minutes I was enabled to administer to each of them, half a pint of hot wine with some grated ginger, and this was repeated every quarter of an hour, until each patient had drank three pints, during all which time, the manual frictions were continued, heated bricks applied to the feet, and bags of hot salt to the hands: the spasms, at intervals, returned, and some of the wine was ejected from the stomach; but as the circulation became more and more established, the spasms grew less: a restlessness then ensued, and an oppression at the præcordia. I then administered to each, forty drops of laudanum—had them covered up with bed cloths, and fumigated all round their cots with benjamin and frankincense; the laudanum had a happy effect in procuring about two hours sleep to each, in the course of which, the perspiration, from being partial, cold and clammy, became general and free: finding on the day of their attack, the rectum had discharged its contents in the action of straining to vomit, without being able to bring any thing up, I directed a stimulant injection to each of those patients, which produced a copious discharge of fœces without any bilious indication whatever, and, as the spasms continued to return at intervals of twenty, or five and twenty minutes, I directed the application of opium infused in brandy to the region of the stomach, and a scruple of musk in a glass of wine for a dose, to be repeated *pro re nata*, from all which, I had the pleasure to observe, that in four and twenty hours after my first visit, the spasms had totally subsided, the patient's voice, which, all along, had been so low as scarce to be heard, was returned almost to its natural state, the pulse that was imperceptible, full and even: my object was then to procure a free passage through the alimentary *canal*, and the spasms being thus taken off, I found an ounce of senna, infused in three ounces of water, and ten drops of oil of aniseed, answer the purpose as well in one of these patients, as five and twenty grains of rhubarb and three grains of calomel, in another; and ten drachms of castor oil in the third.

I attended to the operation of these respective medicines, and could discover no bilious indication in the whole system.

Two of the five men that were put into the bath received no benefit therefrom, but expired in a few minutes after they were taken out; upon dissection, the duodenum was found distended with putrid air, the other intestines empty except the *colon* and *rectum*, in which latter there were indurated fœces; the whole viscera sound, the gall bladder rather turgid, but not diseased.

Two patients labouring under an inflammatory fever, with universal cramps, were immediately relieved by being immersed in the medicated baths; but as they complained of a tightness of the abdomen, with a costive habit, they were purged with the common preparation of salt, manna, and senna, and next day were sent into the convalescent hospital.—Six other patients with the *Cholera Morbus*, spasms of the præcordia, and cramps of the extremities, with bilious

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lientery, and a copious discharge from the stomach, of a green yellow and dark coloured bile, received the greatest benefit from the baths in the first instance; were greatly restored by hot negus with grated ginger in it; obtained some rest from a few drops of laudanum, and nature seemed not to require any cathartic assistance to throw off the disease; nevertheless, as soon as the stomach was able to retain midicine, I judged it necessary to administer a dose of castor oil, beat up with the yolk of an egg, and a few drops of the oil of peppermint, and encouraging its operation with chicken water—this description of sick continued for some time in a convalescent state, but the plethoric patients labouring under cramps, were abroad on their duty in the course of four days; nor did I find it necessary to keep the spasmodic cases in the hospital much longer than the plethoric ones.

During my residence at Arcot, upwards of sixty patients under the above three descriptions of disease, were received into the hospital, and were all successfully treated, in the same manner, except the Drill Serjeant of the Regiment, a robust man in the prime of life, who I accidentally saw in a state of intoxication on the 2d instant, about 11 o'clock in the forenoon; he was not so beastly drunk, but he could laugh at me for my admonition in exhorting him to take care of himself; but about 3 o'clock in the afternoon, he awoke out of his inebriated sleep, with universal cramps, spasms at the præcordia, costiveness, and a great desire to make water, without the ability. This was almost the only instance wherein the bath did not prove efficacious, for he expired in three hours; I lamented that my own indisposition would not admit of examining this body, for I myself was at that period reduced to the necessity of using the bath, from a slight oppression at the præcordia, and cramps in my extremities, all which vanished upon my going into the hot water, and taking a large draught of hot negus with grated ginger in it, which produced a considerable degree of eructation that relieved me; indeed I always observed in the spasmodic cases, the predisposing symptom to relief, was a considerable discharge of wind both from the stomach and intestines. This was so singularly marked in the case of Lieutenant Jennings, that the nurses who attended him, in order to convey to me a favorable change in my patient, reported that he had broke wind like thunder all night.

There was another instance of the inefficacy of the medicated baths, joined to my other medical intentions of relief, in the case of the Barrack Serjeant; this man was an old soldier, who was suddenly seized with spasms at the præcordia, an incessant inclination to vomit, great anxiety, a retention of urine, cold clammy sweats, the eyes sunk, and the voice almost lost; the spasms at the præcordia, were relieved by the bath, musk and opium; the voice was pretty well restored, and the pulse good, but no medical intention of mine could altogether relieve the stricture of the bladder; a stimulating injection had been repeated, and after the bath, and the use of cordials, castor oil had sufficiently opened the alimentary canal; what small quantity of urine he did make, was limpid, but it was so trifling it could scarce be examined.

Fumes of tobacco were injected up the rectum; mustard, garlic and opium applied to the lower region of the abdomen; but, here let me lament the unpardonable omission of those whose duty it is to supply the Presidency with medicines, for I had not any epispastics, nor no cantharides that would raise a single vesicle.

This patient however, on the third day was greatly recovered; still however I dreaded the return of the spasms, seeing I could not remove the stricture of the bladder, and on the fifth evening of the disease, he was suddenly seized with the spasms of the abdomen, which carried him off before I could reach him.

Here then was a field for anatomical investigation, and Mr. Thompson, who had by this time joined me, proceeded in the dissection with the utmost attention; the stomach was found in its natural state, as was indeed the whole alimentary canal; the liver and vesica fellis without any appearance of disease, Dr. Davies, 29th Nov. 1787.

as were also the kidneys and uriters ; but the bladder was most singularly contracted, and did not exceed in size a large nutmeg, yet without inflammation or any apparent disease except its contracted state.

I confess I never before had seen any thing like it, and it is worthy of remark, that this patient had a degree of thirst, beyond any case which presented itself, whilst I was at Arcot, and though there was no restraining him from gratifying his desire to quench it, and there was no convulsion of the stomach, nor any profuse sweats for eight and forty hours, previous to his final dissolution, still however, we could not trace a single vestige of the large libations he had imbibed, nor was there in the whole corpse the least sign of putrescence.

I flatter myself in this brief account of the disease I had to combat with at Arcot, you will agree with me in opinion, that the true Cholera Morbus was not the cause of the great mortality in the 4th Regiment; but a spasmodic affection, from an irritability of the nervous system, no doubt excited by a putrid miasma arising from the situation of the place itself, in so extraordinary a season, and greatly heightened by intemperance, &c. in the soldiers; improper diet; perhaps sleeping exposed to the putrid vapours, with which the atmosphere was loaded, or else what was as bad, in a crowded, filthy, and close barrack.

An account of the disease that prevailed at Ellore, during the hot months of May and June 1794.

Mr. Alex. Anderson, Ellore, 1794.

The disease which I have called the endemial causus of Ellore seems to be occasioned by the heat of the climate, as it appears in general during the hot months of May and June.

Many people were attacked with the disease after sun set, when the evenings became close, and sultry, and several were seized, when not exposed to the influence of the sun or hot winds : the disease therefore cannot be called ictus solis.—There were however several men who fell down, during the hot weather, merely from the effects of the sun's rays.

The thermometer in general stood, at 3 P. M in a room not exposed to the sun, from the 8th of May to the 8th of June 1794, from 102, to 106 ; and during this period the disease principally occurred—the heat was very intense, the winds, though not very violent, were extremely hot, and the sky in general, clear and without a cloud.

Towards the latter end of May there were two falls of rain, which cooled the atmosphere ; but the 5th, 6th and 7th days of June were the hottest of the season, and on the evening of the 7th there was a heavy fall of rain, which continued for several hours, and the hot winds afterwards ceased.---The evenings during this period were found particularly oppressive ; the winds, although hot, occasioned a circulation of air which rendered breathing easy during the day, when a person remained quiet, and did not use exercise ; but they generally ceased towards sun set, and left a dead calm, which was very distressing, and respiration became oppressed even to those in the best health.

Although there may be some difficulty to explain in what manner the heat of the weather produced the symptoms which shall now be described, yet there can be little doubt but that it was the principal and remote cause of the disease ; at the same time, other circumstances may be mentioned as predisposing and occasional causes. The common exercises, and restless disposition of soldiers ; their indifference about that which concerns their immediate welfare, their irregular habits of eating and drinking ; from the latter cause in particular, I have clearly traced the disease in two or three cases; the bowels were in general loaded with feculent matter, but I could not learn that there was more costiveness, or that the bowels had been more irregular, than is common in the hot weather, where-

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there is in general a disposition that way. All descriptions of men were seized with the disease, the young and the old, the robust and the infirm.

In proof of the circumstances above mentioned having had effect in producing the disease, there was not one patient in the hospital seized with it, although there was on an average from 60 to 90 men in it; which can be accounted for only from the patients being kept quiet; a simple but nourishing diet furnished to them, and all spirituous liquors prohibited.

It is a prevailing opinion amongst the Europeans, but an universal one amongst the natives, that there is a deleterious quality in the hot winds; but I cannot speak with any precision on this point. The only instance that fell under my observation, where the winds appeared to have any influence, was during a storm, which lasted from sunset till about nine o'clock of the night of the 23d of May. The sky had been overcast from five o'clock in the afternoon, and it began to blow pretty hard about sunset. The wind varying about suddenly from one point to another, at one instant cool, as if rain was approaching; and at another, hot as if from a furnace. And during these blasts, two men, who were lying amongst many others in the open air were suddenly seized, while asleep, with the disease, in a very violent degree.

The disease made its appearance in two very distinct forms or types.

The first type was very insidious, and the most dangerous. The patient in general found himself somewhat indisposed, and without complaining much, and as if overcome by the heat, lay down on his bed, without being particularly noticed by his comrades, and soon fell, to all appearance, into a sound sleep; he continued likely in this situation for two or three hours, till the catching of the breathing, and of the legs and arms, as the soldiers termed it, alarmed those around him, when they were observed to be ill; they were immediately sent to the hospital, where I saw them in general about 15 minutes afterwards. The patient was then speechless, and indeed was so, from the time of their being discovered to be ill; had lost the power of deglutition; the breathing very laborious, catching; and with a croaking noise which was heard at a considerable distance, as in aploplexy; the eyes were fixed, the face and throat livid, the arms and legs affected with constant convulsive shakings, and tremors, which continued till within a few minutes of death; the most remarkable circumstance was the state of the skin; it was an intense heat, hard, and dry to the feel, as if bound up, and on putting the hand on any part of the body, it left a sensation, which remained a considerable time, like that of a piece of heated metal; and the same degree of heat continued for some hours after death. There appeared to be great oppression at the præcordia, with sickness at stomach; for the patients made several attempts to vomit; the pulse was rapid; often full, and throbbing, and beat from 130 to 150 strokes in a minute; and on every contraction of the heart, a motion of the head was observed, and likewise the pulsation of the carotids, and the more external arteries; the veins appeared turgid. The bowels were in general distended, and the heat appeared rather in a greater degree here, than in any other part of the body; and on administering glysters, feculent matter was in general evacuated to considerable extent, and often very offensive.

The patients from the time they were first discovered to be ill, seldom survived above three hours, and not one of those who were seized with this form of the disease, recovered.

Injections of the most stimulating nature were thrown up, even to a considerable extent, till evacuations were produced; a vein was opened in the arm, the temporal artery was divided, stimulating substances applied to the nose without producing the least effect; attempts were made by putting feathers into the throat, to excite vomiting, but the fauces had lost all sensibility; efforts were made for the same end, by pouring fluids into the stomach by funnels, and such other vessels as were at hand, but we were obliged to desist, from the want of

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proper instruments, as it nearly occasioned suffocation—cold water and vinegar was applied to the head, and cold water was dashed by pailfulls over the body, without observing any change. Blisters and sinapisms were applied to the feet and different parts of the body; the patients expired before they could act on the system.

2d. The symptoms of the 2d type in which this disease appeared, were in some cases more violent, although not attended with so fatal consequences.

The patient, from perfect health, and often when in the exercise of his duty, was suddenly seized with giddiness, sickness of stomach and faintishness, and fell down into a state of insensibility; on recovering a little from the swoon, he complained in general of violent headache, sometimes in the forehead, sometimes in the temples, and sometimes fixed to a particular spot; great giddiness, faintishness, oppression and pain at the præcordia, with sickness of stomach, and vomiting; very bad taste in the mouth, and two patients imagined, when they were struck down, that they had swallowed a mouthful of sulphureous air, the taste of which continued in their mouth next morning: in some cases the patients lay for some time in a state of insensibility without being able to articulate; and in some of the slighter attacks, they complained of nothing else.—The more violent symptoms were, the spasmodic pains across the stomach, and bowels, and convulsions of the whole frame, spasmodic twitches and violent startings of the body, particularly when falling into a slumber, with cramps in different parts; sometimes spasms fixed to a particular spot as the knee, neck, &c. sometimes numbness of the arms and hands, and in one case, where the pain of the head was fixed above the right eye, there was a considerable degree of hemiplegia of the left side. The spasms of the bowels in general returned, after short intervals of ease, with great severity, and the patient became quite frantic, and so much convulsed, as to require many men to hold him; and the bowels then appeared much distended; there was in general an incoherence of the patient's imagination, with a wild and distracted expression of countenance, although, after a little pause, they could often answer any question that was proposed to them; but during the violence of the spasm all recollection was lost. The skin very frequently, though not always, was prodigiously hot, as in the first type of the disease; it appeared flushed, and hard to the feel, like dried leather; occasioned often by drying up of the prickly heat; the motion of the sanguiferous system was very much increased, rapid in most cases, throbbing, strong, and full, as in pleurisy, and the pulse was from 120 to 130—the motion of the head and the pulsation of the arteries were observed as in the first form. The thirst was insatiable, and the patient often seized the vessel, that held the water, in a convulsed manner, with both hands, drank with great eagerness as much as he was able, and dashed the remainder over his body.

The violence of the symptoms continued in general from half an hour, to two hours, till the patient received relief from the medicines that were employed.

The symptoms above related, never occurred at once in the same patient; in some cases the patient lay speechless, and in a state of insensibility, and recovered from it in a short time afterwards, without any other symptom supervening; but the spasms and pain of the bowels occurred in most of the cases.

With respect to the method of cure, we found that vomiting, although the apoplectic symptoms seemed to forbid the use of it, was attended with the best effects. Messrs. Thompson and Lockhart had found during the preceding year, that a solution of sea salt in water was a most useful remedy, in the complaint, and the experience we had of it fully corroborated its utility. The remedy was always at hand, and it proved an excellent stimulus, it always occasioned vomiting and purging, when taken in sufficient quantity, and in the slighter cases of the disease, nothing else was necessary. It became likewise a common remedy amongst the soldiers in the barracks, the use of which I endeavoured to inculcate as much as possible, instead of vinegar, their sovereign remedy. Frequently however, I

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found that the solution of salt did not produce so free vomiting as I thought necessary, principally from the difficulty of getting the patient to drink a sufficient quantity of it, as it often required two or three quarts to excite it. In consequence, after the first vomiting was over, I gave always latterly, about half a drachm of ipecacuanha, and found that free vomiting was produced in a few minutes afterwards, and great ease followed. I have often allowed the patient to satisfy his insatiable thirst with cold water, which filled his stomach, and seldom failed in producing free vomiting: the stomach appeared to be often loaded with undigested food, for great quantities were in general thrown up. During the intervals of using the solution of salt, glysters, of the most stimulating ingredients, were thrown up, and repeated even to a dozen times, until evacuation was produced; they gave great relief, in particular, when administered during the time that the bowels were affected with spasm, great quantities of fæces were in general evacuated, and often very offensive; and on every motion the patient appeared to get relief. The exertion used in giving the glysters, and in making the patient drink the salt and water, appeared likewise to be attended with great good, for it often roused them from the lethargic disposition into which they were frequently disposed to fall, during the absence of the spasm. As soon as the patient had got some ease, there was often a disposition to sleep, which, when observed, a large dose of castor oil was administered, and he was then allowed to go to rest. The oil seldom failed in a short time to operate, and often removed the complaint. When the spasms, headache, heat of skin, the full and throbbing pulse, were very violent, and were not relieved by the remedies already mentioned, blood-letting was had recourse to, but to reap advantage from it, we were obliged to use the lancet very freely; the only man that we lost under this form of the disease, fell a sacrifice to it, I am afraid, from blood-letting being too sparingly used—for in the subsequent cases, when the symptoms required the lancet, it was had recourse to with freedom, and even repeated, with the very best effects.

To relieve the spasms, and to produce a determination towards the skin, the hot bath was had recourse to; but the patients could not be kept long in the water, on account of faintishness: it was however of use on several occasions, and by covering the patients with quilts, after the exhibition of it, and pressing and champooing the legs and body, a perspiration was sometimes produced which seldom failed to relieve the symptoms; the hot bath was never attended with that immediate effect in this disease, which I have observed it produce in other spasmodic affections.

As soon as the violence of the symptoms were overcome, blisters in general were applied, either to the temples, when the headache was violent; or to any particular part which happened to be affected with spasms, or between the shoulders, or to the ancles; it often happened when the blisters began to rise that the patient became more collected, and by the time they were removed, the head became clear, and free of pain, the spasmodic startings relieved, and the skin and pulse softer. Blisters appeared peculiarly well adapted to this disease, as well as in the fevers that occurred during the hot season; and it may be remarked that every patient who got relief from the blisters complained for several hours of a distressing strangury, while those cases that ended fatally, were not affected with this troublesome symptom; about the time that the blisters were applied, a large dose of laudanum with antimonial wine was given, and the comfort it afforded by producing sleep cannot be easily conceived by those who have not seen this disease;—it was useful likewise in producing a determination to the skin, and relieving the startings, &c This remedy was used at bed time during the continuance of the disease, and indeed after the first 24 hours we depended on it, and purging, in a great measure for the cure.

No remedy gave greater relief, especially to the spasms of the bowels, than purging; and it appeared to be likewise useful in the fevers of the season, and even carried to considerable extent. Castor oil was the medicine which was generally employed, and it seldom failed in producing free evacuation

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without increasing the heat of the skin or pulse; a purge was administered every morning while the headache, giddiness, foul tongue, and thirst continued, and the patient seemed to get ease, and even strength, on the exhibition of every dose.

When the spasms, headache, giddiness, heat of skin, thirst and the full throbbing pulse continued after the first day, the common course was to give a purgative in the morning, so as to produce free evacuation, the use of diluting drinks, occasionally the hot bath, and always the laudanum and antimonial wine on going to bed: by these means, the patients, a few cases excepted, were discharged from the hospital within 8 days from their being taken ill.

Cold water was generally dashed over the patients on their being taken ill; it sometimes relieved the faintishness, particularly in the slighter cases, and was always agreeable to the patients feelings, but I cannot say that I ever observed any permanent effects from it; when the patients were on the recovery it was found an useful restorative.

The fevers that occurred at this season of the year were no less fatal than the disease above described; but they were not so alarming, as the symptoms were not so violent, nor the deaths so sudden.

The patient in general complained of slight headache, great giddiness, sometimes sickness at stomach, oppression at the præcordia, great dejection of spirits, distressed expression of countenance, and the mind was overwhelmed with something which the patient could not describe, but particularly a great anxiety about his own situation, great prostration of strength, and a restlessness which almost deprived the patient of sleep; the legs, arms, and particularly the fingers appeared to be in constant motion, and in some cases, the legs in particular were seized with cramps, the tongue in general foul, but whitish and rough, the thirst very considerable, and in some cases towards the latter end of the disease the patient could keep nothing on his stomach; a total loathing of food; the little sleep the patient got was disturbed by frightful dreams and startings, and never refreshing; there was frequently incoherence and irregular wanderings of the imagination; the skin was hot, and parched, and no remedy that was used produced the smallest moisture, and in several cases the patients complained of nothing but this heat of skin, restlessness, and thirst; the pulse was in general pretty full, and beat from 110 to 140. The bowels were rather costive; in some cases there was an evident remission for a whole day, and the patient imagined himself pretty well, only greatly debilitated; in other cases I never could observe the smallest increase or decrease of fever, or any of the symptoms, and in all the cases of this fever that ended fatally, the patient was suddenly seized with convulsive shakings of his arms and legs, the noisy and catching breathing; and the scene ended in all of them exactly in the same way as is described in the first type of the endemical causus, which this fever may likely be more properly termed.

The cases that ended fatally generally died from the third to the seventh day, from the time they first complained, and no medicine that was administered appeared to be attended with the smallest benefit.

Every endeavour was used by blistering, vomiting, the hot and cold bath, opiates and antimonials, diluting drinks, neutral salts, purging, &c. to induce a determination to the surface, but no moisture could ever be observed. Wine, bark, musk, camphor, æther, &c were likewise had recourse to without success.

I must make one observation on the use of a valuable medicine, tartar emetic; which others, who may have the treatment of this fever, may reap some benefit from. I have experienced the best effects from this medicine in fevers of all sorts at other seasons of the year, particularly in intermittents and remittents, during the rainy and cold seasons; but in the fever of which I now speak; and indeed I may say the diseases which occur during the

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hot months, for there is a wonderful affinity, it must be considered an uncertain and often a very dangerous remedy. Its action by vomiting cannot always be depended on, and when it does not operate in this way its effects are very often deleterious; it sometimes occasions cold sweats and coldness of the extremities, great prostration of strength and a low pulse; it sometimes, when taken in the smallest quantities caused vomiting; and then it seemed, during its exhibition, to relieve the heat of skin and thirst; but if it did not operate upwards, then occurred prodigious pain and tension of the bowels, followed by numberless copious and watery stools, and which debilitated the patient to such a degree, that it was with much difficulty he could be brought round, and I must be candid to confess that one case I am very apprehensive fell a sacrifice to the debilitating and deleterious qualities of this medicine. I have in consequence almost left off the use of tartar emetic in these fevers, and have found a good substitute in the use of ipecacuanha.

The number of sick and casualties that occurred in this regiment, occasioned by the heat of the weather, and which principally happened from the 6th of May, to the 8th of June 1794, are as follows.

The strength of the Regiment was on the 1st of June	382
The number of men seized with the endemial causus, during the months of May and June	40
The number of fevers during these months were	54
Total	94
The number of deaths of the 1st type during that period	6
Do. Do. of the 2d type do.	1
	—7
The number of deaths from fevers, 1 officer and 4 privates	5
Do. Do. on detachment, 1 officer and 1 private	2
Total number of deaths in the Regiment	14

Surgeon W. Scot, 9th July 1819.

Remarks *on the use of Nitric Acid, as a substitute for Blisters.*

It is usual, I believe, to impute a greater degree of efficacy to "firing" or the actual cautery, as a counter-irritation, than to blisters, &c. It is common to hear a Farrier say of a horse "blister him, and if that don't do, fire him, which never fails." We hear much also, of the successful application of firing, by the native practitioners. Though admitting the fact, that firing was more efficacious than cantharides blisters, I had no defined notions in what this superiority lay; but I could not impute it merely to a difference in the degree of action, for the blisters used with horses, seem often more painful than firing.

The substitution of nitric acid, for cantharides blisters, in cholera, has given me opportunities of making some observations on its mode of action, which appear to me elucidatory of the subject.

Seeing the quickness of action of the acid in cases of cholera, and that it could be applied under any circumstances of phrenzy, or unruly conduct, I have been led to employ it in those cases of severe disorder in the stomach and bowels, consequent on excessive drinking, where the promptitude of relief is of primary importance, and where common blisters are altogether useless, and inapplicable; also in cases of acute and sudden pain from other causes, in hepatitis, and so forth—wherever the disease depends on spasm, or nervous irritation, the relief is *wonderfully sudden*, and when it is connected with inflammation, I think it is fully as certain, and more speedy, than after common blisters.

The pain upon the whole, is represented as sharper than that caused by blisters, though some patients say not; but the chief point is, that it reaches its *acme* in two minutes. It continues severe for three hours, and in three more, Surgeon W. Scot, 9th July 1819.

altogether ceases. It is in this *quickness of action* that it resembles the actual cautery, and to this therefore I impute the greater efficacy of both; for it is reasonable to conclude, that the effect will be as the *intensity* of the cause; we may compare it to the *shock*, produced by the sudden effusion of cold water on the surface, which, under a different management, may be altogether avoided.

But the acid possesses other advantages. Whoever has felt the tedious, *progressive* pain of a blister, the wearisomeness, and irritation produced by it; the agony of motion; the sickness, and disgust from the dressings, and the after sickly smell, will be disposed almost to suffer any pain, rather than submit to a repetition; it is also obvious, that all these circumstances must have their bad effects on the patient. But the action of the acid is essentially different; the application is over in a few seconds, the pain, though severe, is at least on the decrease, and is not aggravated by motion, nor by friction; no dressing is required, and the patient is often freed from all the trouble of his disorder, before the cuticle is abraded.

I have not seen any occasion for the after use of cantharides. If the acid has been diluted with half its bulk of water, and applied lightly with a feather, the cuticle is stained of a straw, or sulphur colour; in three days, it begins to pucker, with a little serum underneath; a slight red ring surrounds the part, and the cuticle comes off on the 4th or 5th day, leaving the surface like a common blistered part, with a few deeper streaks, where the cutis vera has been touched—But if the acid has been used undiluted, or has been longer applied, the cuticle becomes of a deep brown; it does not rise, or pucker, as the subjacent vessels necessary for throwing it off appear to be destroyed; the red ring, forming on the 3d day, becomes deeper and broader, and a portion of the true skin, of the thickness of sheep's leather, begins to separate in 6 or 7 days. The parts are rather tedious in healing, but this, taking it in all its bearings, is no great disadvantage.

As no serous discharge ensues, the acid cannot be substituted for blisters in cases when *this* discharge is the motive for their application; neither, of course, can it be admissible where a *continued* rather than *intense* counter-irritation is thought to be indicated. But in all urgent, and acute cases, and especially when the patient is unruly or restless, the acid appears to me to possess advantages sufficient to recommend its general adoption in practice.

To the Editor of the Madras Courier.

Madras Courier, 12th January 1819.

Sir,

Though the disorder, as an Epidemic, has subsided at Madras, yet as it still continues in the Southern Provinces, the following account of the *Spasmodic Cholera* and of the remedies applicable to it, taken from works in general use among the Hindu Medical Practitioners, will at least gratify curiosity, and, as the formulas of the Medicines are given in the original languages may be productive of utility.—The extracts I shall make will, I think, shew that the treatment of this disease, which, although so eminently successful here and elsewhere, must, I believe, in the strictness of regular practice be pronounced somewhat empirical, if not borrowed from the Hindus, is closely correspondent with that indicated in their medical writings. To say generally that the doctrine taught in these books, which, as will be observed, encourages the free exhibition of mercury and the metallic calxes, displays similar coincidence in many points with the *oriental* practice of our Physicians, would not be a departure from the fact.

The Native Practitioners, though they agree generally in the diagnostics of the disease, differ as to its pathology and systematic classification. Some hold that the Spasmodic Cholera belongs to a class of diseases, known by the generic term *Sannipáta*, which includes every species of *Paralytic* and *Spasmodic* affection, the principal symptom being spasms or convulsions of part or the whole

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of the body. Of the diseases belonging to this class, thirteen species are enumerated, of which some are accounted curable and some incurable.—Others rank this disease in a class called *Ajírna Dyspepsia,* the principal symptom of which is indigestion ; under this, four species are reckoned, the third of which, *Vidhúma Vishúchi,* is identified with the Spasmodic Cholera.

It will not be thought strange that this difference of opinion should exist, when it is considered that even those versed in European science have not yet agreed as to the pathology of this Epidemic ; though the unlearned must think it strange that an inflammatory cause should be assigned to a disease, which, without any apparent previous excitation, prostrates the strength, as it were, at one blow, and sinks the patient in a few hours from a state of health and vigor to the lowest degree of debility.—It would be presumption in me to venture a decision "when Doctors disagree," or even to enter at all into the merits of either controversy ; I may be permitted, however, to add, with respect to the Hindu classification of the disease, that they who deny that the Spasmodic Cholera, in the form in which it has spread over India, is properly designated by the terms *Sítánga-Sannipáta,* admit that the main, if not the only difference between it and the *Vid,húma Vishúchi,* is, that the former is simply spasmodic, and, though usually, not suddenly, fatal, while the latter is epidemical and most rapid in its progress. The following extracts, taken from medical writings in Sanscrit and Tamil, in which the several species of diseases included in the two classes are noticed, the distinguishing symptoms of those identified with the Spasmodic Cholera detailed, and the remedies prescribed for them stated, seem to suggest, as a necessary corrollary, *that the disease first described is the same as the latter, when its progress is accelerated and its virulence increased by its having become epidemic.*

These extracts have been translated with reference to the Commentaries, by which all Indian writings of a similar nature are accompanied. The literary wealth of the Telugu language consists chiefly in the excellent Tícas written in that dialect on Sanscrit works of all descriptions, by one of which the copy of the Chintámani here used is accompanied. All manuscripts on scientific subjects, which have been repeatedly copied by ignorant scribes, must be subject to multitiplied error, and medical writings in Sanscrit and Tamil are proverbially so : I have been obliged, therefore, to restore the sense, with the assistance of the Commentators, in some of the passages cited, by conjectural emendations ; these, however, in no instance affect the general meaning.

The thirteen species belonging to the class denominated *Sannipátaca,* (from the root *pat fall,* combined with the collective preposition *sam* and the intensive *ni)* are stated in the Sanscrit medical work Chintámani, attributed to Dhanwantari, a mythological personage, who is said to have been produced by the churning of the milky ocean, whence he issued bearing the Amrïta Calasa, the vase containing the liquor of immortality ; he coincides in character with the Esculapius of the Greeks.

DISEASES.	NATURE.	MEDICINES.
1. Antaca	Curable	Vijayab,hairavam
2. Sandica	Incurable	B,hirtab,hairavam
3. Ruddáha	Ditto	Sancarab,hairavam
4. Chittavibramah	Curable	Madurab,hairavam
5. *Sitánga*	*Incurable*	Anandab,hairavam
6. Tántrica	Curable	Manob,hairavam
7. Cant,hacújita	Incurable	Swachchhandab,hairavam
8. Carnica	Curable	Calyánab,hairavam
9. Bhagnanétra	Incurable	Vidaranab,hairavam
10. Rectaishti	Ditto	Sannipátab,hairavam
11. Prálapa	Curable	Calyánab,hairavam
12. Jihwica	Ditto	Sidbab,hairavam
13. Ab,hinyása	Incurable	Caravalab,hairavam

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The species considered to correspond with the Spasmodic Cholera is the 5th, *Sitánga,* which is thus described in the Chintámani :—

TEXT.

సర్వాంగంచంద్రవచ్ఛీతంకాసశ్వాసంచజాయతే
హిక్కాసర్వాంగవైకల్యంవాంతిసంతాపమూర్ఛనం
అతిసారంగాత్రకంపంశీతాంగసన్నిపాతకే

Chilliness, like the coldness of the moon, over the whole body, cough and difficulty of breathing.

Hiccup, pains all over the body, vomiting, thirst, fainting.

Great looseness of the bowels, trembling of the limbs, these are the symptoms in Sítánga-sannipáta.

In the Yúgamuni Chintámani, a Tamil work, to which the following verse belongs, the symptoms are stated at greater length.

TEXT.

சீதாஙக வகுளுநதிருககும பேதிகாணுநதேகமுளள சநதுகளுங குததலகாணு
மீதாக முபபுசமு மிருமபல மூர்சசை விககலு மாயுடல சதி பிததல பேசல
ஈதாகுஞ சீதாஙக சனனிதறகெயிது நாளுமபதிவிறநதேயசாததியெனறு
கோதானஙகொடுககுமுனனே மருநது வேணடிற கொடுதது பபராசனருளேகொ
ணடுதானே.

Translation.

The symptoms of the Sídángam are---general coldness of the body, looseness of the bowels, pains in the joints, great thirst, flatulency affecting the lungs and causing a difficulty in breathing, cough, swooning, hiccup, a general weakness of the body, delirium. The Sídánga-sanniden, usually fatal in fifteen days, is accounted incurable ; but when Medicine is demanded, the gift of a Cow having been previously made, it may be administered, relying on the mercy of God.

The remedy prescribed for it, in the Chintamani is the composition called *Raza Ananda B,hairavam* of which the formula is contained in the following extract.

SANSCRIT.

సౌభాగ్యహింగుళంగంధంహారవీర్యంచతాళకం
తీక్ష్ణంతామ్రంనాగవంగంమర్దితంత్రిఫలద్రవైః
పర్పటస్యకషాయేణడోలాయంత్రేదినంపచేత్
ఫణిపిత్తేనసంభావ్యంగుంజామాత్రందినంపిబేత్
త్రిదినేనవినశ్యేత్తుశీతాంగంసన్నిపాతకం
తత్రభుక్తంభవేత్పథ్యంరసస్యానందభైరవం

Translation.

1. Saub,hagya	Soda.
2 Hingulam	Vermilion.
3. Gand,ham	Sulphur.
4. Haravírya	Mercury.

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5. Tálacam	Orpiment.
6 Ticshnam	Calx of Steel.
7. Támram	Do. of Copper.
8. Nágam	Do. of Zinc.
9. Vengam	Do of Lead.

Grind these ingredients (equal quantities must be inferred, no weight being mentioned) with Tri-phala (the collective name of the three Myrobalans Sívá, the Yellow, Calidruma the Beleric, and A'malaca the Emblic). Boil them for three days in Dólá (in suspension) in a decoction of Perpatam (a medical herb of a cooling nature); mix up the mass with the gall of a serpent, and make it into pills of one Ganjá (about three grains) each; in three days this, the Rasa Ananda-B,hairavam, diet being strictly observed, will cure the disease called Sítánga-Sannipátatacam, lit: *the chill of the whole body attended by spasms.*

The following composition called *Rasa Calyána-B,hairavam,* appropriate to the 8th species of this class *Carnica Sannipáta* may also be given in the fifth.

TEXT.

రసంవిషంగంధంనాగవంగంకణానయం

దినైకంచిత్రకద్రావైఃయద్దీతంగుళికాకృతం

వజ్రమూషగతంపాచ్యంవాలుకాయంత్రకేధిసె

స్వాంగశీతళముద్ధృత్యమత్స్యపిత్తైనభావయేత్

చణమాత్రంప్రదాతవ్యంకర్ణికంహంతితత్క్షణాత్

క్షీరాన్నంశర్కరాయుక్తంపధ్యంవద్యాత్ప్రయత్నతః

భక్షయెదిక్షుఖండానిరసఃకల్యాణభైరవం

Translation.

Rasa Calyána-B,hairavam is a medical composition formed of the following Ingredients; namely,

1. Rasam	Mercury.
2. Visham (1)	A poisonous Root.
3 Visham	Venom of a Serpent.
4. Gand,ham	Brimstone.
5. Nága	Calx of Zinc.
6. Vengam	Do. of Lead.
7. Caná	Long Pepper.

All these should be of equal weight. Grind them together with the juice of Chittramulam (a medicinal root " Ceylon Leadwort, Plumbago Zeylonica," it is of a very hot nature, and in medical works, therefore, is known by all the synonymes of fire) for 12 hours, make them into pills and letting them dry in the air, put them into a strong crucible, place it in a sand-bath and calcine for 12 hours; then grind the mass with the gall of fish and form it into pills of 2 grains each.

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(1) This ought probably to be read *Vishá* in Tamil *Vasambu,* " The root of the sweet flag Acorus Calamus," otherwise called *Mahaushad,ham the great medicine,* because it is considered sovereign in indigestion and other complaints of the stomach and bowels. But neither this nor the preceding ingredient can have any effect on the result of this preparation, for as the mass is to be calcined all animal and vegetable substances must be entirely decomposed.

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This, the Rasa Calyána-B,hairavam, may be given in the species of convulsion called Carnica, the diet being carefully attended to, and confined to milk with Rice boiled and mixed with sugar; the drink to be the syrup of Sugar-Candy.

The species comprehended under the class *Ajírna* are four, which are thus enumerated in the Chintámani.

DISEASES.	DISTINGUISHING SYMPTOMS.
1. Rasa Sésham.	Dyspepsia, in which the head is chiefly affected—Megrims; it takes its specific name from its being often caused by the excessive use of Mercury.
2. Viswash'tam.	This is the common Dyspepsia, affecting the whole body, attended by pains in the limbs and joints.
3. Vidhúmam:	Vishúchi, attended by the symptoms hereafter explained is comprehended under this term---*Vid,humè cha Vishúchy astu.*
4. Dhúmam:	Dyspepsia attended by *spontaneous coldness---swav,háva sítalam.* It is the same disease as the foregoing when not epidemic, but neither so rapid in progress nor virulent in degree.

The symptoms of the *Vishúchi*, or *Vid,húma Vishúchi*, for the term characterising it as belonging to the class of Dyspeptic diseases may be added or omitted, are particularized in the following verses from the Chintámani.

TEXT.

అతివెగవిషూచ్యాస్తునెత్రయుగ్మవిహీనతా
స్వెదొమూర్ఛాతివెగశ్చఉన్మాదశ్చిత్తవిభ్రమః
వెదనాజానుజంఘాస్థాకుక్షిశూలవిదాహతా
వాతపిత్తవిహీనంచకరపాదాంగశీతలం

Translation.

The Vishúchi is most rapid in its effects; its symptoms are—dimness of sight in both eyes, perspiration, sudden swooning, loss of understanding, derangement of the external and internal senses, pains in the knees and calves of the legs, griping pains in the belly, extreme thirst, lowness of the windy and bilious pulses, (1) and coldness in the hands, feet and the whole body.

The formula for the remedy prescribed in the Chintámani for the Vishúchi is as follows.

TEXT.

సైంధవారజాజీఫలజాతిపత్రకం
ఫెనంసకర్పూరమరీచహింగుళకం
శివాసగౌరీమృగనాభికాశ్మరం
త్రిభ్రుష్పకావ్వేధెత్రిదినంచమర్దితం

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(1). In the Hindu Medical system three distinct pulses are reckoned namely, *Váda* that governed by the *windy* principle, *Pittum* that governed by the *bilious* principle, and *Sléshtma* that governed by the *phlegmatic* principle.

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త్రత్యైకనిష్కద్వయమేకనిష్కం
ఫైనంచతున్నిష్కయుజీర్ణరోగాన్
ఎతాన్వ్యభిఘ్నంతివిఘూచిశీతం
సర్వాంశ్చదోషాన్ క్రిమిజాంశ్చరోగాన్

1.	Sindúra, Precipitate of Mercury,	2	Pagodas	weight.
2.	Jájip,hala Nutmegs, ..	2	do	do
3.	Játi-patra, Mace, ...	2	do	do
4.	Phénam, Opium, ..	4	do	do
5.	Rasa-carpúra, Sublimate of Mercury, ...	2	do	do
6.	Marícha, Black pepper,	do	do	do
7.	Hingulam, Cinnabar, ..	do	do	do
8.	Sivà, Yellow Myrobalans, ..	do	do	do
9.	Gauri, Bezoar, ...	do	do	do
10	Mrïga-Náb,hi, Musk, ..	1	do	do
11	Cásmaram, Saffron, ..	2	do	do

These must be ground in a decoction of Tripushpa, (Thorn-Apple "Datura Fastuosa") for three days. Take two Nishcas of each, except the musk of which 1 Nishca, and the Opium of which 4 Nishcas must be taken: These form a specific for all disorders arising from indigestion, for the chill of the Vishúchi and for all complaints occasioned by worms.

Note.---The Mass is to be made into pills, and the dose is from 10 to 15 grains, according to the nature and virulence of the disorder, in such vehicle as may best agree with the patient.

Another remedy is prescribed in the Tamil medical work called Careiselmunnúru, attributed to Agastiyer, the Hippocrates of Southern India.

This composition, called *Cálacanta-méga-naráyaner*, consists of the following ingredients.

கரிவெடிபடிகாநதநறுமபூ.
பொரிகடல்நுரையோபலமபூமதுவில்
விரவிடுரவியிலவை விடுமது முததிரவ கரையது சததநீராயவடி.
யெடுவிணணீர் முபபது பதிவிநது
கொடுவிவகமபதினறுாநறுமபூ
பனனிருசிவிநாலெழுபதமெதானறையும
முனவரு சததநீர் விடடனா.
உலாதது வாலுகையுளளடை தநேயெரி
தில்ததாவணா யாறறிபமெரியோர்
கமல மிரணடிடுகாடடம நாகிடு
விமலனவிலயகனடி நிவின சாமம—எழெ யருணனபொகிருநதிடு மதுபார்

Translation.

1. Cari, Blue vitriol, 10 old St. Pags. weight.
2. Vadi, Salt petre, do.
3. Padigi, Allum, do.
4. Cántam, Loadstone, do.
5. Narumbù, Sulphur, do.
6. Pori, Soda, do.
7. Cadelnúrei lit: *foam of the sea,* prepared cuttle-fish bone.

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Take one palam weight of each of these, mix them together in ardent spirits, digest in the sun, grind the mass in urine and distil; (2).

Then grind together the following articles.—

8.	Ven'nír, Quicksilver,	30 pags. weight.
9.	Lingam, Vermilion, or factitious Cinnabar,	15 do.
10.	Haridarám, Orpiment,	10 do.
11.	Narumbù, Sulphur,	12 do.
12.	Manasilei, native Cinnabar,	4 do.
	Total	71 do.

Mix this composition with the liquor before obtained and enclose it in a (3) Válugeia (Retort) and calcine over a fire supplied by husk of Tila and the wood of the Senna plant (ávárci): continuing the operation for 49 hours Indian (of which there are twenty-four to a natural day;) namely for 1 Jámam (7 hours) there must be the heat of a single billet; for 2 Jámam, (14 hours) the heat of a fire like a lotos flower; for 4 Jámam (28 hours) as much heat as fuel can give.—Worship the feet of the holy Vinàyager and removing the composition from the fire after the expiration of 7 Jámam, it will resemble the tail of the Arunen, i. e. be of a bright red. (4.)

Note—The Dose is ½ a fanam weight in a decoction of the leaves of the Túduvalei, *three lobed night-shade*, Canden-cattari, *wild Brinjal* "Solanum Jacquini," and A'dátedei "*'a species of Justicia'*" with dry ginger, long-pepper, and black-pepper, mixed with honey. It is administered in consumption, asthma and every species of paralytic and spasmodic affection and in other diseases.

The Vishúchi, though it appears occasionally only as an Epidemic is by no means an uncommon disease in India. In the territories subject to Madras, it is said to be annually endemic among the lower orders of the people during the wet season, and its effects are familiarly expressed by the words வாந்தி பிராந்தியுடனே செத்துப்போனான் *being seized with vomiting and purging he immediately died.* That it is chiefly confined to persons of the lower tribes, who are accustomed to a poor and irregular diet, and exposure to the weather, and that it spares those invigorated by a more generous diet, whether animal or vegetable, and whose circumstances enable them to protect themselves by good clothing and substantial dwellings, from the changes of the atmosphere, has been fully confirmed by recent experience. The Hindus account for this by a mythological fable, in which the origin of the disease is stated and which, did I not wish to avoid the incongruous mixture of truth and falsehood, I would relate. It is to be read, either in Sanscrit or in Tamil, in the Jayána Vásish'tam, and the substance of it is, that the female demon, Rácshasi, by whom the disease is caused, was on a certain occasion restricted by the injunction of Brahmà from afflicting the worthy, whose lives were regulated by the precepts of their religion, and appointed to punish the vices of the base and dissolute.

* * *

As my examination of the Vaidya Sástras has been casual and may never be repeated, I shall here notice a fact, which will add another to the many proofs of the truth of the Wise man's adage, that—"There is nothing new under the Sun." It is that the Inoculation for the Cow Pox was known of old time to the Hindu

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(2). The Tamil scholar will perceive that this is not a literal translation; but I believe I have extracted the right meaning from the verbiage of the original. The menstruum thus obtained, is said to *devour* the Mercury and other ingredients immediately it touches them.

(3). This, otherwise called Ganga-silà cuppei, is a vessel made of a kind of coarse black glass in which the Bairàgis bring the water of the Ganges. The vessel must be covered by seven folds of cloth when used as a retort and closed by a stopple of Balapam, French chalk.

(4). By this process a species of compound precipitate of Mercury seems to be obtained.

Madras Courier, 12th January 1819. Medical writers. To substantiate this statement, it is necessary only to refer to the *Sactéya Grantham*, attributed to Dhanwantari, and, therefore, undoubtedly an ancient composition. In this work, after describing nine several species of the Small Pox, of which three (one, A'lábhi, being the confluent kind) are declared incurable, the Author proceeds to lay down the rules for the practice of inoculation; from this part the following extracts are taken, of the first of which the original is given in the English character for the satisfaction of the Sanscrit Scholar, and of the other for the sake of brevity, translations only.

TEXT.

D,hénu-stanya ma'súchi va Naránàn cha ma'súchicà.
Taj jalam báhumúlàt chasastraán téna grïhitavàn.
Báhumúlè cha'sastráni rect' òtpatti caráni cha.
Taj jalam recta militam spótaca jwara samb,havah.

Translation.

Take the fluid of the pock on the udder of a Cow, or on the arm between the shoulder and elbow of a human subject, on the point of a lancet, and lance with it the arms between the shoulders and elbow until the blood appears; then mixing the fluid with the blood, the fever of the Small-Pox will be produced.

Translation.

The Small-Pox produced by the fluid from the udder of a Cow, (Góstany' ódacam) will be of the same gentle nature as the original disease, not attended by fear, nor requiring medicine; the diet may be according to the pleasure of the patient, who may be inoculated once only, or two, three, four, five, or six times. The pock when perfect should be of a good colour, filled with a clear liquid, and surrounded by a circle of red. There will, then, be no fear of the Small-Pox as long as life endures. When inoculated with the fluid from the udder of a Cow, some will have a slight fever for one, two, or three days, and with the fever there will sometimes be a slight cold fit. The fever will also be attended by a round swelling in the arm-pits and the other symptoms of the Small-Pox, but all of a very mild nature. There will be no danger, and the whole will disappear in three days.

I am, Sir,
Your obedient servant,
Calvi Virumbon.

Madras, 2d January, 1819.

Ram Raz, 6th June 1823.

Letter from Ram Raz, attached to the College of Madras, respecting the preceding Extract from the Courier.

I beg leave to acknowledge the receipt of your Note of yesterday's date, and in reply to acquaint you, that I have no reason to doubt that the quotations given in Mr. Ellis's paper which accompanied it, with respect to the disease called *Sannipátam* are authentic extracts from the medical works in Sanscrit and Tamil, to which they are attributed; for, I find two of the Sanscrit Stanzas cited therein, in a collection of verses from various medical authors which a friend of mine has in his possession. The Vaydya Chintámani is the most celebrated production of Dhanvantri: it gives a very elaborate, and in general, pretty accurate description of almost all the diseases that affect mankind, though the remedies it prescribes for them are not always to be depended upon. The Yugamuni Chintámani appears to have been composed under the same principles; and both these works can be procured at Madras, if required.

In regard to the authority quoted by Mr. Ellis in support of the argument that the inoculation of the Cow pox was known to the Hindoo Doctors in this country, previously to its being introduced by the English, I must suspend my humble opinion, at least until I procure a sight of the Sactéya Grandha, which, as Tandavaroya Mudeli informs me, was procured for Mr. Ellis, from a Native

Ram Raz, 6th June 1823.

Doctor who was the unfortunate companion of that Gentleman in his last journey to the Southward: if the theory was known of old time in this country, I cannot but think it extraordinary, that there should not have been a single instance of the practice, especially since the experiment has been productive of so much benefit to society.

I have once before heard, that in the same medical book, Dhanwantri has laid down rules for vaccination, exactly in the same manner as is now practised by the European pactitioners, as he received them from the Sacti, the goddess of nature; and a story is related of the origin of diseases, and the remedies prescribed for them in this work, which I hope you will permit me to recite here, as briefly as possible, in order that you may judge how far truth is intermixed with falsehood.

In the Creta yugam, says the legend, men and animals not being subject to death, the goddess of the earth was unable to support the great weight that oppressed her. Brahma therefore, at the request of Siva, created the goddess of death, *Cali*,* from the fire of divine anger, and commanded her to destroy all beings without any distinction whatever. The goddess, trembling with terror, thus addressed Brahma: " O Creator! I am created by you a female, and this command therefore, does not suit my nature;"—while she thus earnestly supplicated him to remove from her this most heavy guilt, she shed tears; but Brahma having refused to hear her prayers, she departed, and with continual tears, performed the severest penances to Brahma. At length Brahma appeared, and declared that her hands should not be stained with blood; but all the tears that she had shed during the time she performed penance should become diseases, and that all beings should be destroyed thereby. From that day came into the world the lingering pain of disease;—persons of all ages began to die of the several diseases which originated from the tears of the goddess of death. She then, by the power of her destroying tears, tyrannized over gods and demons, men and animals; the deities however, having drank the amrïtum, which was produced from the churning of the milky ocean, became immortal; and there arose also, a celestial physician named Dhanwantri, to resist the power of the goddess of death, and to instruct the world in the science of physic. Dhanwantri performed penance to the Sacti, the goddess of nature, who presides over sickness; and she having appeared, he intreated her to instruct him in the proper remedies for all diseases: She accordingly, having informed him of the various disorders, and their cure, proceeds to declare the methods of removing small pox from the world entirely.

Such is the preamble of the Sacteya Grandham alluded to in Mr. Ellis's paper; and until we can procure two or three correct copies of the work in question, about which I shall make enquiries, we cannot determine how far any reliance can be placed on the authority.

CASES OF CHOLERA, WITH OBSERVATIONS,

EXTRACTED FROM THE RECORDS OF THE

MEDICAL BOARD.

Garrison Surgeon Heward, Madras, October 1818.

Private *John Lumsdaine*, of His Majesty's 30th Regiment, a patient in the Garrison Hospital, was seized with vomiting, and purging, of watery discoloured fluid, in the night of the 9th instant, between 11 and 12 o'clock; when I saw him, about an hour afterwards, the vomiting and purging had ceased, though he retched two or three times afterwards, but ejected nothing from his stomach. He complained of cramp, or spasms in his legs, and also of both hands, which were so violent as to induce him to scream aloud, several times—his skin was below the natural temperature, and dry; and his countenance was sunk, and dejected; tongue dry, and he complained of increased thirst; pulse 104, contracted and feeble.—He took eighty drops of laudanum in some hot brandy and water, which was directed to be repeated every two hours; was immersed in the tepid bath, when on being replaced on his cot, a blistering liniment was carefully rubbed into the epigastric region, and stimulating frictions were diligently applied to his extremities; and he was directed to take a table spoonful of strong brandy and water, to which was added twelve drops of laudanum, and the like quantity of æther, every ten minutes; and an anodyne injection, to which was added, a solution of assafœtida was directed to be thrown up every hour or two, as appearances might indicate.—While in the bath, his pulse became much fuller, and stronger, and he expressed himself as being greatly relieved by it; soon after he was laid on his cot, he felt an inclination to sleep, which apparently was prevented by a return of the spasms. The surface of his body became gradually cold, and the bath was again had recourse to.—4 A. M remained in the bath about 12 minutes, and being languid, and faint, he was removed to his cot again, when he dozed for about a quarter of an hour, during which period, he continued perfectly free from spasm; after which time, the twitchings and spasms of the lower extremities returned, gradually ascending towards the trunk; affecting the abdominal muscles, as well as the diaphragm, and other muscles subservient to respiration, in a particular manner; breathing became interrupted, and difficult, with great anxiety about him; and he was bathed in cold, and clammy sweats; had a collapsed countenance, with eyes much sunk in their sockets, and there was a tendency to retching at times, but nothing was thrown up from the stomach, pulse 110, contracted, and weak.—6 A. M. the patient now complained of a sense of heat about the epigastrium, and the laudanum and æther draughts were directed to be given in a table spoonful of strong camphorated mixture, instead of the brandy and water; and the fomentations, injection, liniment, and frictions, were persevered in.—The cramps continued to increase, as well in frequency, as in severity; the pulse at the wrist was not to be felt; and his body was covered with cold clammy sweats, with extreme prostration of strength.—He gradually became insensible; deglutition impracticable, and he expired soon after eight o'clock A. M.

Dissection.—In the cavity of the thorax, nothing very unusual presented. The lung of each side was healthy in its structure, and much distended with air; each adhered loosely to the diaphragm: the adhesions appeared to be of long duration. There was no preternatural quantity of the liquor pericardii; the heart itself was quite free from morbid appearance, and its right ventricle contained a pretty large coagulum of very soft texture, which extended some way into the cavity of the pulmonary artery.—The viscera of the abdominal cavity, were, throughout, sound in structure. The stomach and small intestines, contained a considerable quantity of fluid, which, in the former viscus, and the duodenum, had the appearance, and consistence of milk: but gradually attained a yellowish hue, as it reached the caput cœcum coli. The colon had nothing of a diseased appearance. Many of the mesenteric glands were enlarged, and indurated—The kidneys free from disease—The bladder was nearly empty.

Remarks.—Private *Lumsdaine* was a draft from the 2d to the 1st Battalion of His Majesty's 30th Regiment of foot; arrived in India about four months ago, and had been almost constantly in his regimental hospital from that time, until the departure of the corps from the Presidency, a few days ago, when he was transferred as a patient to the General Hospital, laboring under chronic opthalmia, for which, in the acute stage of the complaint, he had been subjected to repeated abstraction of blood.—In the above case therefore, it is probable the living powers were much weakened, and the constitution under those circumstances that peculiarly favored the operation of those causes which produce spasmodic cholera, which, in this instance, I have reason to believe, was an incautious exposure to the cold and damp north westerly winds, in the beginning of the night, in which he was taken ill.

Asst. Surg. John Wilson, 2d Bat. 22d Regt. Madras, Oct. 1818.

Mootien, Sepoy, admitted 23d October, 10 o'clock A. M. Ætatis 27. Rather of a robust habit of body. Was seized about 8 hours ago with violent vomiting and purging, of a watery nature; when he was brought to the hospital, his pulse was not to be felt at the wrist; skin covered with a cold clammy sweat; complains of a burning sensation about his stomach; intense thirst; tongue dry, and a little furred; great prostration of strength—Submurias hydrag. grs. xvi washed down with equal parts of hot brandy and water; hot bricks to his extremities, and to be well covered with cumlies—11 o'clock; has had two watery stools; continue the hot bricks; and the brandy and water, to allay his intense thirst; let him have a glyster combined with ʒii of laudanum immediately—12 o'clock a return of vomiting; one watery stool; skin a little warmer; pulse not to be felt; the glyster was ejected without doing any good; continue as before—2 o'clock P. M. No alteration; repeat the calomel; continue the hot applications, and the brandy and water—6 o'clock. No return of vomiting; still watery purging; in other respects the same—9 o'clock. At his urgent request, being a christian, his friends were prevailed upon, Asst. Surg. John Wilson, 2d Bat. 22d Regt. Madras, October 1818

without my knowledge, to send for a clergyman, to administer the sacrament to him, previous to death, which he conceived to be inevitable—½ past 9, I observed, for the first time, the diaphragm and muscles of respiration acting very laboriously, with great apparent difficulty in breathing; I ordered immediately a strong liquid blister to his chest, and took away, with great difficulty, twenty ounces of blood from his arm; the blood was of the darkest colour, and very thick—10 minutes after the bleeding, his pulse was feebly felt at the wrist; but his countenance of a much livelier appearance, and he thinks himself much better; continue the brandy and water, and hot applications as before—12 o'clock, a large bilious stool of a most offensive nature. Skin warmer; pulse rising—1 o'clock left him asleep—24th, 6 o'clock A. M. Slept for nearly four hours; has had two more stools of the same nature; pulse rising fast; skin warm; thirst abating; feels hungry. Let him have arrow root with a little port wine in it, for breakfast—10 A. M. doing well—Capiat statim mistur. purgant. ℥ ii—5 P. M. The purgative gave him 4 stools; the three first of a bilious nature, but the last nearly natural—8 P. M. Improves—Capiat submur. hydrag. grs. iv, pulv. antimon. grs. ii, opii grs. i, conserv. rosa q. s. ♍. et fiat pilul. ii, stat. sumend.—25th, past a good night—26th, convalescent, port wine, and nourishing diet—31st, discharged.

Shaik Gareem, Sepoy, admitted 26th October, 11 o'clock A. M. Ætat. 29. Was seized a few minutes ago with giddiness, which was shortly afterwards followed with cramps in the calves of his legs; about a quarter of an hour after his admission into hospital, he vomited a large quantity of watery fluid, and had a scanty stool of the same nature. Skin clammy, pulse feeble at the wrist; tongue dry, but not furred; complains of much thirst; urine scanty and high coloured—Submur. hydrag. grs. xvi, washed down with equal parts of hot brandy and water; and a glyster combined with ʒiii of laudanum to be thrown up immediately; hot applications to his extremities—10 o'clock P. M. The glyster was ejected without doing the least good; no return of vomiting; several watery stools; intense thirst, which was relieved by hot brandy and water, and occasionally a little conjee—4 o'clock P. M. Much better; one very offensive bilious stool—Misturæ purgans ℥iii,—10 o'clock several bilious evacuations, left him for the night, with directions to be supplied with arrow root and port wine, and to be kept warm—27th, past a good night—28th, 29th, 30th. Convalescent—31st. Discharged.

Vencanah, Sepoy, admitted 12th October, 4 P. M. Ætatis 20. Of a robust habit of body, was seized while on duty this morning, with vomiting and purging of a glary matter, almost colourless. When he was brought to the hospital, his pulse was not to be felt at the wrist. Extremities cold, and his skin covered with a clammy sweat. Eyes sunk; complains of deafness, and great difficulty in breathing. Tongue dry and furred; intense thirst. Submur. hydrarg. g. xvi. pulv. antimonii gr. ii. opii. gr. iss. cons. rosa q s. ♍. et fiat Bolus. Let him have an anodyne enema immediately; hot applications to his extremities; and equal parts of hot brandy and water to be given, when called for. 6 o'clock. No return of vomiting; the enema was ejected in the course of 4 minutes after it was thrown up, without affording any relief. Two stools of a watery nature; complains of very great difficulty in breathing. Twenty ounces of blood were taken from his arm with great difficulty; it was of the darkest colour, and thicker than any blood I ever saw drawn from a vein before: Immediately after the bleeding, he breathed much easier, and his pulse at the wrist could be faintly felt. Skin a little warmer; let sinapisms be applied to his extremities, and his body be well rubbed with hot salt; and the brandy and water be continued. 8 o'clock, one large bilious stool, which afforded him great relief. Breathing completely relieved, from the bleeding. Pulse rising. Mistura purgans ℥iii.—13th. Past a good night, has had several bilious stools. His only complaint now, is that of great prostration of strength; nourishing diet, and 4 glasses of port wine during the day. 14th. Free from complaint. 15th. Capiat mistur. purgant ℥iii. 18th, Discharged.

Captain *G: D.* Ætatis 34, of a robust habit of body, was brought to my quarters on Monday morning, who informed me, that the day previous, he had been seized, about 11 o'clock, with vomiting and purging of a watery nature; that he vomited three or four times, and was purged as often; that he felt himself much better about 2 in the afternoon; at night, he went his rounds, being on *guard* at the *Fort*. On his return he states himself to have been in a state of perspiration, when he drank a tumbler of cold water, after which, he was seized with incessant vomiting and purging, which continued until his arrival at my quarters. Immediately after my seeing him, he had one watery stool, with a great inclination to vomit, and incessant craving for cold water, in consequence of violent thirst, and burning sensation about the stomach; tongue dry and furred; pulse not to be felt at the wrist; extremities cold; and his whole body covered with a cold clammy sweat; countenance expressive of great despondency. A careful examination of the region of the liver took place; no complaint on pressure of that organ. He was immediately undressed and put into my warm bed, which I quitted on his arrival, and covered over with blankets; bottles of hot water to his extremities. At this period, there was not any appearance of spasms, nor could he recollect having suffered any pain, during the preceding day— ℞ Submurias Hydrarg. gr. xvii, stat: sumend: Postea Tinct. Opii ʒii and a claret glass of hot brandy and water. The medicine remained on his stomach about one hour and half, during which time, he was supplied with hot brandy and water to allay his thirst; at this period, part of it was disgorged; continued the hot fomentation to his extremities; 10 o'clock pulse felt at the wrist, small and slow; extremities rather warmer; has had another watery stool; let him have an enema with two drachms of laudanum. The enema was ejected in the course of five minutes without producing any good effect; no inclination to sleep, but thinks himself rather better. 11 o'clock. Capiat stat. Submur. Hydrarg: gr. x. from eleven, until two, appears improving; watery purging still continues; half past two, had a return of sickness; 4 o'clock, sickness of stomach entirely left him; but still watery stools, without any appearance of bile, or fecal matter. Capiat. Stat. Submur. Hydrarg. gr. vi. Extract. Colocynth. Comp. gr. vi, Pulv. Antimonialis gr. ii, Conserv. Rosæ qt. st. ♍. ol. ft. Bolus—No alteration from 4 until 6; has had another watery evacuation; 6 o'clock spasms appeared in the abdominal muscles, when, a large blister was immediately applied to the part. The spasms encreasing, called in Mr. Surgeon Davies, Asst. Surg. John Wilson, 2d Bat. 22d Regt. Madras, October 1818.

when it was agreed to take blood from the arm, which was done to the extent of 40 ounces, with great difficulty, from the thickness of the blood, notwithstanding a large orifice had been made; threw up another injection. He feels himself relieved from the loss of blood, pulse rising, skin more natural—Calomel gr. v, stat. From this period, until 11 o'clock, no alteration; constantly complaining of great thirst, which was relieved by small quantities of brandy and water; no prostration of strength since the attack—11 o'clock P. M. complains of restlessness, and appears very despondent. From the dormant state of the liver, it was agreed to endeavour so assist the operation of the calomel by a brisk cathartic, and gamboge, was thought most likely to remain on his stomach, 4 grains of which were accordingly given, and retained, but without the desired effect—3 o'clock, gave him three grains of calomel and an enema of Pulv. Ipecac. ʒii. Magnes. Vitriolat. ℥i. Congee water ℥xv ♍. which was ejected, after being retained for a few minutes. 5 o'clock, countenance expressive of great mental agony; conceives himself beyond all hopes of recovery.—6 o'clock, no alteration in his evacuations; skin still moist, and the stomach retains all the medicines. Blister rose well, pulse very feeble. Pulv. Jalap gr. xxv. to be taken in a little jelly.—10 o'clock, remains the same; no alteration in his evacuations; agree if possible to effect a change by mercurial frictions, combined with camphor, on his thighs and arms, every two hours, and one grain and a half of calomel to be taken every hour, in a little jelly; which was continued, until his decease—11 o'clock A. M. The pulse began to sink, extremities clammy; hot bricks, warm applications, and frictions, applied; and he was supported with small quantities of brandy and water. From 12 until 2, he took warm congee, and tea, and slept a little, appears rather better; he continued in the same state until 9 o'clock, during which period, he was supported with soup, and hot brandy and water; half past 9 he started from his bed, had a convulsive spasm, and instantly expired.

Dissection.—I examined the body in the presence of Mr. Surgeon Davies. The liver appeared sound, but of a paler colour than usual; the gall bladder was much distended with bile of the consistence, and colour of tar; the spleen and pancreas quite healthy; the stomach empty, and of a natural appearance; the intestines, particularly the duodenum throughout their internal structure, were lined with bilious matter, nearly of the same color, and consistence, as that of the gall bladder, which adhered firmly to their villous coats; no appearance of fecal matter in any part of the canal; the urinary organs sound, and the bladder empty; no appearance of inflammation in any of the viscera of the abdomen. On examination of the thorax, the heart and pericardium were found in a sound state; the lungs were completely distended with blood of the darkest color; the left lobe, to all appearance, must have ceased performing its functions, some hours previous to death; the right was nearly in the same state, except a small portion which appeared nearly in a natural condition. On examination of the head, there was not any appearance of a determination of blood to that organ, and after a careful dissection of the brain, there did not appear any fluid in the ventricles, or any other appearance of disease.

Asst. Surg. M'Leane, H. M. 84th Regt. Bellary, 1st Oct. 1818.

Serjeant *Sanderson*, Ætat. 45, 19th September 1818, ¼ 9 A. M.—Admitted this morning with violent spasms of abdomen and extremities; a sense of burning at the scrobiculus cordis; purging of watery stools and vomiting of watery matter; skin quite cold and covered with perspiration; pulse not perceptible at the wrist; collapsed countenance, hands shrivelled, surface of a livid colour, was seized about 7 o'clock this morning, but only this moment brought to the hospital; complained the day before of giddiness and langour, but never reported himself.—Placed upon warm cumblies, and frictions used with a strong liniment composed of chillies, mustard, garlic, a proportion of spirits of turpentine and arrack, to the abdomen and extremities, bottles filled with hot water and applied to his feet and sides of his body.—℞ Hydrarg. Submur. grs. xv. Cons. Rosæ. ʒss. ♍ statim. sumend. c. haust. infra presc.! ℞ Tinct. Opii. gt. lx. Mistur. Camph. ℥iss. ♍ ft. haust.—Vomited in about 20 minutes after taking the above, frequent watery stools. ℞ Tinct. Opii. ʒj. Decoct. Oryzœ. ℥ii. ♍ ft. Enema statim. injiciend.—Took four ounces of port wine with spices, made warm and to be repeated every half hour.—9½ A. M. Kept the injection, ten grains of calomel repeated with 100 drops of laudanum, with warm spirits and spices, frictions omitted, and had the warm medicated bath, which he remained in about 10 minutes and relieved the spasms entirely. Applicetur Empt. Lyttæ. regioni. Epigastricæ.—10 A. M. Took some warm spirits and 50 drops of laudanum, after which he vomited.—11 A. M. Return of spasms of legs and arms, no stool, skin continues cold, pulse scarcely perceptible, although the bath and frictions relieved the spasms, the coldness continues without the slightest reaction or determination of blood to the surface. Repet. Hyd. Submur. gr. xv. c. Tinct. Opii. gtt. lxxx. et Vin. Rub. ut antia.—11½ A. M. No pulse at the wrist, pulsation at the carotids pretty firm, rather more heat about the chest, extremities continue cold notwithstanding the application of warm bottles and frictions, slumbers without any regular sleep, very restless, and appears much oppressed, constantly throwing off the bed cloths, cannot keep a cumbly over his chest—voided three or four ounces of urine and colourless.—12¼ P. M. Ten grains of calomel repeated with 60 drops of laudanum in ℥ij. of warm port wine with spices, had slight retching after it but no vomiting.—1 P. M. No return of vomiting, but seized with cramp in his legs at this moment in a slight degree, skin continues cold without any pulsation at the wrists, and scarcely felt in the carotids; the whole of his surface quite livid as also the nails of his fingers and toes; voided no urine since last report, one watery stool.—2 P. M. Expired.

Dissection.—On dissection, the gall bladder distended with bile of the colour and consistence of treacle, no appearance of disease of the stomach, but it contained all the wine and medicine taken, none of which passed into the intestines; the cystic duct appeared obstructed and contracted; no signs of bile in the intestinal tube; the small intestines slightly inflamed externally; the villous coat particularly inflamed, on the surface of which appeared a whitish fluid similar to conjee; the colon much distended with a white and extremely fœtid fluid with some indigestible matter which must have been lodging for a considerable time; some slight appearance of inflammation of the villous coat.—The bladder considerably contracted and without a drop of urine, but some white mucus; the ureters contained a whitish fluid similar to conjee, the colour much distended with a white and extremely fetid fluid, with some indigestible matter which must have been lodging for a considerable time, some slight apppearance of inflammation of the villous coat—The bladder considerably contracted and without a drop of urine, but some white mucus; the ureters contained a whitish fluid similar to that in the intestines—The spleen smaller than natural and shrivelled.—This man had been rather an intemperate liver, and debilitated from the effects of the climate, having been a considerable time in the country.

Asst. Surg. M'Leane, H. M. 84th Regt. Bellary, 1st Oct. 1818.

Thomas Broomhead, Ætatis 45, robust habit, but a very intemperate liver, ¼ 8 A. M. 25th September 1818. Was attacked at 3 o'clock this morning with purging of watery matter, and at 7 with vomiting of a watery and mucous fluid; half an hour ago cramps in the legs and back came on; pulse now 120, very weak, skin rather cold and moist, but nearly of the natural colour; debility does not appear great, no pain at the stomach or bowels; twelve stools since the attack and vomited thrice; very restless, longing for cold drink—by his own account remained in the privy for 2 hours from the severity of the purging: Mitt. sang. ad lbj. hab. enema. anodyn stat. cap. hydrarg. submur. gr. xx. quam. primum. c. haust. infra. inds. ℞ Spt. Ammon. Aromat. Tinct. Op. aa. ʒiss. Mistur. camph. ℥j. ɱ. ft. haust.—9 A. M. Habeat. Balmeum. tepidum. statim.—Repet. med. ut supra sine opio. quam. primum. Remained 7 minutes in the bath, in which he vomited, took some warm spirits and spices with 100 drops of laudanum; after being put into bed, covered over with cumlies, and warm bottles applied, and a blister to the epigast. region; pulse still very feeble, is at present in a perspiration (10 minutes past 9), vomited the draught, pulse continued low after the bleeding.—9½. ℞ Mistur. Camph. ℥iss. Spt. Ammon a. ʒss. Tinct. Opii ʒi. ɱ. ft. haust. statim.—10 A. M. Voided the injection; slight return of spasm of legs, very restless and calls for cold water—Repet. enema anodyn.—10¼ A. M. Pulse not perceptible at the wrist, but is covered over with a cold clammy perspiration—Repet. venæ. sectio. and ℥viij.—Repet. haust. ut supra. si. opus. sit.—¾11 A. M. Pulse felt in a very slight degree at the wrist, is inclined to sleep, seized this moment with cramp in his right leg, and cried out immediately, but soon went off—11¼ A. M. Pulse felt at the wrist, but feeble; perspires a good deal, continues very cold, no return of vomiting; took some warm port wine and spices, and a drink made up with a little conjee water and brandy, spices and sugar, which he takes as occasion may require—12½ P. M. Return of spasms in a slight degree in his left leg and toe—blisters applied to the calfs of his legs. ℞ Tinct. Opii. gtts. lx. Spt. Ammon. Aromat. ʒss. Mistur. Camph. ft. ℥iss. ɱ. ft. haust. quam. primum.—¼1 P. M. Vomited the above draught immediately, pulse very small and 160, continues very restless, skin cold and covered with a clammy perspiration. Repet. haust. ut supra quam primum et omni hora sine opio.—2 P. M. Very much inclined for sleep since last report, no stool, or vomiting, had slight return of cramp in his left foot, pulse very small and about 80, skin not quite so cold, complains of the pain of the blister; still urgent desire for drink, lower extremities quite warm, arms continue cold; took some chicken soup, and continues the drink as before, the whole surface becoming very livid.—4 P. M. No pulse, breathing very laborious, lividness of surface considerably increased.—5 P. M. Expired.

Dissection.—On dissection, the bile found in the gall bladder, of a natural appearance, and a quantity flowed freely into the intestines on pressure being applied; not the smallest tinge of bile through the whole intestinal canal, but the usual white mucous fluid; all the bile ducts quite free; some bile can be pressed out of the whole of the bile vessels; not a drop of urine in the bladder, which is contracted to a very small size and its inner surface covered with a little white mucus similar to that in the intestines; the stomach half full of cordials and medicine, little altered in appearance, small traces of inflammation on it, and the intestines.—The spleen shrivelled and about the size of a wallnut.—The flow of blood at the first bleeding was rather languid, with the second it only dribbled slowly and soon stopped entirely, notwithstanding that the orifice in the vein, was large in both instances.

Asst. Surg. De Lisle, Chicacole Oct. 1818.

Lieutenant Colonel T. Ætat. 45, October 31st. At one o'clock, P. M. he sent for me, having had several evacuations resembling water, with a white sediment; has loss of appetite, and nausea. I advised him to take 20 grs. of calomel, which he refused.—In half an hour after, I visited him again;—he had passed more stools as before, and as he would not take calomel, I prescribed 100 drops of Tinct. Opii. in ℥ij. of brandy. Pulse strong and natural, 75.—4 o'clock, was seized with a vomiting without bile.—His strength suddenly failed, and his pulse became much weakened; no stool since I saw him; a large dose of Tinct. Opii. was given, which he threw up; it was repeated, and he retained it for a short time; several more doses were prescribed, which he generally vomited soon after taking; has no purging; has severe spasms in the calves of his legs.—7 o'clock. Skin became cold; pulse scarcely felt at the wrist; he consented to take 20 grains of calomel, and again in the night, 20 grains more, which he retained. Friction with hot sand, &c. was applied, but without any effect. He became very restless, and was covered with cold perspiration; no pulse, and he appeared sinking fast.—Oil was administered at 8 o'clock A. M. the following day, and he died at 4 o'clock P. M.—The spasms every now and then returned, to the hour of his death.

Dissection.—In the stomach was found a quantity of green bile, and its inner surface was throughout inflamed, of a dark red colour, to which adhered some dark colored mucus.—The upper part of the duodenum was slightly inflamed; in the cœcum was a quantity of green bile.—The liver was quite healthy, and so were the contents of the thorax. The brain appeared to be of a firmer texture and more full of blood than usual; and also the membranes enclosing it.—About half a dram of blood was seen extravasated under the pia mater, in the upper part of the left hemisphere of the brain.

Remarks by Superintending Surgeon Stirling.— I think it right to add a few particulars to Mr. DeLisle's account of this case, as I was at Chicacole at the time of Colonel T.'s decease, and was the only person, besides Mrs. T. present about 9 or 10 o'clock of the night preceding his death, at which time a very marked change took place, suddenly, in his condition, viz. that, from a state comparatively composed, Asst. Surg. De Lisle, Chicacole Oct. 1818.

during the intervals of the cramps of his limbs, which every now and then returned with very great violence, and then abated, leaving only a latent sense, as he described it, of the spasms, he all at once used some expression altogether irrelevant, either to his situation, or to what we had been talking of before, and from that time got into a low state, evidently of a comatose nature, with extreme restlessness, and impatient desire for almost continual change of posture, such as marks the most imminent danger in the advanced stage of this fatal disorder; perhaps, with rather more of coma than usual, altho' he was evidently perfectly sensible when roused, particularly towards morning, and expressed his wishes with perfect distinctness, though with great impatience, when he wanted to be turned, to have his legs rubbed on account of spasms, or above all, to have water to drink, his importunity to be allowed which was, after a time, exceedingly violent.—Almost immediately before the above change took place, he had observed to me, in the most distinct and collected manner, that neither the laudanum nor the brandy which he had taken, appeared to produce any tendency to drowziness, or to affect his head in any way whatever; but that the last spasm had got above his knee, and, although he felt easy at the time of speaking, he thought his was a kind of attack that would very quickly carry a man off, unless he had very active assistance.—While talking in this manner he all at once complained again of his stomach, and I was induced, from this recurrence, to give him about a drachm of laudanum in a tea spoon, which he had scarcely swallowed, when he turned over in the most violent pain, apparently, his pulse undulating and hands cold, and, using the incoherent words above alluded to; had a violent fit of cramps and vomiting at the same time.—As this dose of laudanum was almost instantly rejected by vomiting, and what he had before taken, though Mr. DeLisle had gone as far as ʒiss. for a dose, had apparently produced no effect whatever; the desperate circumstances of this case, led me now to give, as soon as I could get him to swallow, nearly ʒi of laudanum at once, which I did under the impression that the momentary incoherence during the cramps, not having been preceded by any tendency to drowziness, must be an effect of the general spasmodic action which the remedy had altogether failed to subdue.—This dose of laudanum was retained for a time, but also thrown up; after which, he obstinately refused every thing in the way of medicine, and as the laudanum either was bad, or from the violence of the disease seemed to have no effect in checking either the vomiting, or cramps, we were afterwards only anxious to get him to take a second quantity of calomel, which he positively refused; but which we afterwards took the opportunity of exhibiting by stealth in some conjee, which was given him by half glassfuls, at the time when his calls for drink were most violent.—The oil next morning was given in the same manner, so that he had taken greater part of a glass, mixed up with warm water, before he appeared to notice it.—I have since regretted that I did not propose venesection in this instance; instead of pushing the laudanum to the extent that was done, when the symptoms were found to defy its power; particularly as Colonel T. was a stout man, and for many hours after the attack could probably have borne depletion well; but of the effect of this remedy I have had no experience to form a judgment upon, and the evidence of the utility of laudanum, in violent spasmodic cases, in doses that would at other times certainly be considered unsafe, urged me irresistibly not to give up the hope of success by perseverance in this remedy where life was so apparently in danger from extreme spasmodic action in the system; yet perhaps the practice of bleeding in this disease may be somewhat analogous to its use in the convulsions of puerperal women, for which it is, I believe, the only remedy that can be depended upon, although inflammation is not even suspected.—I beg permission in concluding the observations on this case, which has very strongly interested me, to record that I am not quite satisfied, on recollection, as to the fact stated by Mr. De Lisle, that the contents of the stomach and bowels were of a bilious nature. The cæcum certainly contained a large quantity of fluid resembling dirty congee which was of a green hue, and which I remember Mr. D Lisle suggested was probably produced by the operation of the calomel, but I was particularly struck with an anomalous circumstance at the time, which I hardly now know what to think of, that, although much of this substance was effused upon the clothes in the dissection, it did not communicate any green appearance, when it had dried upon them.—I have not sufficient knowledge of the appearances generally found in the dissection of patients who die of Cholera, to enable me to judge whether extravasation is a common occurrence or cause of the state allied to coma, that so commonly occurs before death in this disease; but it seems probable that in this case the very sudden change of condition described was produced by extravasation taking place on the night preceding death.

Garrison Surgeon M'Cabe, Poonamallee. Oct. 1818.

Thomas Field, Private, was brought into hospital on the 20th October at 5 P. M. with the following symptoms. Frequent vomiting and purging of a whitish fluid; severe spasms of the lower extremities, extending to the abdomen, and thorax; surface of the body cold; face, breast, and arms, covered with a clammy sweat; fingers shrivelled, eyes sunk,—burning sensation in the region of the stomach, intense thirst, deafness, and noise in his ears. The pulse at this time scarcely to be felt at the wrist. The above symptoms came on, he says, early in the morning. He had instantly given him, in a draught, two ounces of brandy, 90 drops of Tincture Opium, and two drachms of Tincture of Capsicum.—Fomentations were carefully and extensively applied to the abdomen, and heated bricks, and bags of sand to the extremities. Spirits and water, and ginger tea were supplied as drink. The draught was rejected in a few minutes, and he had two motions of the same appearance as before. Draught repeated, with a scruple of calomel, and the region of the stomach rubbed with spirits of turpentine; and an anodyne injection ordered to be thrown up, every second, or third hour.—6 o'clock. The vomiting returned in a slight degree, and he had two motions. Spasms extremely severe, and extending to the upper extremities. Pulse not be felt at the wrist. The draught and calomel were now again repeated, with the addition of 30 drops of laudanum, and frictions, and fomentations were carefully continued; a blister was applied to the region of the stomach.—8 o'clock. No vomiting or purging since taking the last draught. The spasms are much abated, but he is extremely restless, and with difficulty kept on his cot. He now took the following draught. Mist. Camph. ℥ij. Sp. Æth. Vitriolic. ʒss. Tinct. opii. gt. 80. Spirits and water continued as his drink, and 5 grains of calomel, and four of camphor were ordered, every three hours.—21st, The vomiting and purging recurred in the night, but the spasms ceased entirely from 1 A. M , and from this time, his breathing became more difficult, and he lay in a comatose state till 3 P. M., when he expired.

Dissection.—On dissection, the stomach was found much distended with air, and contained fully a quart of whitish fluid. There was a considerable determination of blood to the whole of the abdominal viscera, and the bladder was rather contracted. There were no other unnatural appearances observable.

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POONAMAL-
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Thomas Greenfield, Private, 24th October 6 P. M complains of vomiting and purging of a watery fluid; attended with spasms of the lower extremities, so excessively severe, as to make him cry out for relief by friction. Pulse small, and quick; skin cold; countenance anxious and dejected; insatiable thirst, and constant desire for cold water. Says he was suddenly seized in Barracks a few hours before his admission. He is ordered the following draught instantly. Brandy three ounces, Tincture Capsicum ʒ j. Tinct. opii. 150 drops. Fomentations are applied to the abdomen, bags of heated sand and bottles of water are applied to the extremities. At ½ past 6, the vomiting and purging returned, and the spasms increased in severity, attended with great pain in the region of the stomach. Pulse and heat of skin little altered; has passed no urine since admission. He is now ordered 160 drops of Tincture of opium, three drachms of Tincture of Capsicum, in three ounces of Brandy; with spirits and water, and ginger tea for drink. The epigastric region to be rubbed with ol. Terebinth—Fomentations and other applications to be continued. At ½ past 9 o'clock, he is perfectly tranquil, and disposed to sleep—no spasm or vomiting for nearly the last hour. Pulse better, and skin warm.—The following draught, and 20 grs. Calomel are ordered to be given at 10 or 11 o'clock. Mist. Camph. Aq. Menth. aa. ℥iss. Spt. Æther. Vit. Tinct. opii. aa. ʒ ft. h —25th. He slept some hours in the night, but the vomiting and purging returned at 6 A M. accompanied with excessively severe spasms of the abdomen, thorax, and arms, with considerable affection of respiration; great uneasiness at stomach; intense thirst, and a noise in his ears. The abstraction of 20oz. of blood from the arm afforded immediate relief from these alarming symptoms. The following draught is ordered, and 20 grs. of Calomel, Tinct. opii. gt. 130. Spt. Æther. Vit ʒi Tinct. Capsic. ʒ j. Aq. menth. pip. ℥iij. ft. h.—10 h A M. No return of spasm; skin warm; pulse stronger. As he has had no motion, he is ordered, Inf. Sen. Comp. ℥iv. Tinct. Cardam. Tinct. Jalap aa. ʒiij. ft h. St. S.—2 P M Has had two copious bilious motions. Complains of soreness all over his breast, and stomach. The parts are ordered to be rubbed with strong liniment, and the following pill given. Cal. Camph aa. gr. iv. h. s.—26 h. Has no complaint except the soreness of his breast, and limbs. No motion since yesterday. Repet. haust. Aper. Cont. Pil.—27th, Going on well; bowels regular. He is ordered one pill at night—28th, Convalescent.—31st, Has no complaint; discharged cured.

James Dodd, Private, 27th October, 11 A M. Complains of frequent vomiting and purging of a glary, whitish matter, accompanied with a distressing sensation of burning heat in the region of the stomach, and indeed all over the abdomen; skin cold, and clammy; pulse extremely feeble; countenance greatly altered. Eyes dull and sunk; intense thirst; has no spasms, nor has he felt any, since the vomiting and purging first attacked him, which, he says, was about 6 o'clock yesterday morning. He was very ill in the night, and drank largely of cold water. He is ordered, immediately, 90 drops of laudanum, with three drachms of tincture of capsicum, and two ounces of brandy. Fomentations to be applied to the abdomen; bottles with warm water, and bags of heated sand to the extremities; the region of the stomach to be well rubbed with ol. terebinth, and a large blister afterwards applied to the part. Spirits and water and ginger tea for drink; the draught was rejected in about 15 minutes, when it was again repeated with the addition of 30 drops of laudanum and 20 grains of calomel.—1 P M The purging of the same whitish matter continues, but he has not vomited since taking the last draught; no pulse to be felt at the wrist; breathing becoming affected; skin very cold and covered with a clammy sweat, particularly the breast and upper extremities. The calomel is repeated with the following draught. Spt. Æther Vit. ʒiss. Tinct. Opii. gtts. 100 mist. Camphor ℥ss. Aq. minth. ℥i. ft. h.—3 P M. Three motions of the same matter; no vomiting nor the slightest appearance of spasm—He is evidently sinking fast; the draught is repeated, but to no purpose. He expired at 5 P. M.

John Burns, Private, October 28th. Complains 8 P. M. of vomiting and purging attended with severe spasms of the lower extremities, great prostration of strength, skin cold, pulse small and rapid, eyes dull and heavy, uneasiness of the epigastric region; says he was attacked with the above symptoms in Barracks a few hours after his return from Madras. He is ordered immediately of laudanum 120 drops, tincture of capsicum two drachms, spirits three ounces; fomentations to the abdomen, heated sand and bottles with warm water to the extremities; spirits and water and ginger tea for drink. The spasms abated considerably for nearly an hour, and the vomiting and purging ceased for the same time, when at 10 A. M. the spasms and other symptoms returned with increased severity; the former extending to the thorax and upper extremities affecting his breathing and hearing, and he appeared to labour under excessive sufferings. The abstraction of 25 ounces of blood from the arm was productive of immediate and permanent relief from the spasms and other painful symptoms. He is now ordered the following draught, and after it 20 grains of calomel, and to be repeated as occasion may require. Tinct. Opii. gtts. 130 Tinct. Capsic. ʒ j Spts. Æther. Vit. ʒi. Spt. Tin ℥iij. ft. h. Fomentations, &c. to be continued.—29 h. He had a tolerably quiet night, and it was not found necessary to repeat the draught. At 9 A. M. he vomited some yellow bilious matter, and had a small stool of the same appearance; he is ordered 20 grains of calomel instantly with Aq. Menth. ℥ j Tinct. Opii. Spt. Æther Vit. aa. gutt. 40.—2 P M. Stomach settled, complains of giddiness and thirst; no motion; urine free. Inf. Senn. Comp. ℥iv. Tinct Cardm. ʒiv. Tinct. Jal. ʒ iii. m ft. St. S—6 P. M Three copious motions; says he feels his body all over sore, and a stiffness in his legs and hands; he is ordered the following. Calomel Camph. aa. grs. iv. 4 q. h. s. Mist Camph. Aq. menth. aa. oz iss. Tinct. Opii. Spt. Æther vit. aa. ʒ. ft. h. n. s.—

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30th. He had a good night, complains only of a soreness of his breast and limbs. Repet. Mist. aper. Cont. Pil.—31st. going on well. Cont. Medic.

James Howard, Serjeant, a stout robust man. Was brought into hospital at 2 P. M. on the 3d instant, labouring under the following symptoms. Severe spasms of the lower extremities; distressing pain in the region of the stomach, and a feeling of uneasiness all over the abdomen. Skin cold, and clammy; pulse very small, and quick; intense thirst. Says he has had no vomiting or purging. He is ordered immediately 100 drops of laudanum, three drachms of tincture of cardamom, and three ounces of spirits—Fomentations to be applied to the abdomen; bags of heated sand to the extremities, and warm ginger tea for drink. He continued free from the spasms for more than half an hour, after taking the above dose,—when they again returned with greater severity, extending to the abdomen, and thorax, and in a slight degree, to the upper extremities, accompanied with increased pain of the epigastric region; sickness at stomach, and a sense of suffocation. Countenance at this time anxious, and dejected, pulse extremely feeble,—In this dangerous state, he was bled, at 3 P. M. to the extent of 30 ounces, with almost immediate relief from the spasms, and sense of suffocation; and, although the pain of the epigastric region was not entirely removed, it was very considerably abated. As no evacuation has passed by stool or urine since his admission, 20 grains of calomel were now given, with the following draught. M. camph. ℥i, spt. æth. vit. ʒiss. tinct. opii. ʒi aq. menth. pip. oz. iii. ft. h.—6 P. M. No return of spasms; pain of the epigastrium entirely removed, by the application of a mustard cataplasm, quickened with Ol. Terebinth.—Pulse full, and heat of skin nearly natural. Slept about half an hour; one scanty motion. Infus. Sennæ Comp. oz. ii. Tinct. Jalap, Tinct. Cardam. aa. ʒii. Spt. Æther. Vit. dr. iss. ft. H. St. S. to be repeated at 8 o'clock, if required.—4th. He had a very good night, and feels quite well this morning, with the exception of a soreness of his lower extremities. Bowels open; motions natural; urine free; Mist. Camp. dr. iii. Aq. Menth. Pip. oz. iii. Tinct. Cardamom dr. ii. ft. H. M. et. N. S.—5th. No complaint, discharged.

1st August 1819.

William O'Brien, Private, aged 26, was seized in Hospital, on the night of the 7th July, with vomiting and watery purging, of which he made no mention till the following morning, the 8th, at 5 A. M. when I found him affected with great irritability of stomach, pain and burning sensation all over the epigastric region; icy coldness of the skin, and profuse clammy sweat; spasms of the legs, but not severe; countenance pale and ghastly; extreme inquietude, intense thirst, and pulse scarcely perceptible. In this state, I found it impossible to abstract blood. Laudanum and cordials, the vapour bath, frictions with Ol. Terebinth, blister to the region of the stomach, opiates and stimulant injections, &c. were had recourse to, but without affording any relief. At noon, respiration became laborious, and at 2 P. M. he expired without a struggle. It may be proper to mention, that this man was recovering from hepatitis, and had in a great measure regained his strength, and appetite.

Patrick Donagan, was also attacked in Hospital in the adjoining ward to O'Brien's, on the morning of the 8th instant, with nearly similar symptoms; and although we succeeded in taking 18 ounces of blood from his arm, and had immediate recourse to the vapour bath, laudanum, cordials, &c. no benefit followed, and he died at 4 P. M. This man had just recovered from a severe dysenteric affection, and was to have been discharged from hospital on the following morning.

Dissection of O'Brien.—In the thorax, the lungs were found in a complete state of collapse, turgid with blood, and of a dark, livid appearance. In the left side of the heart, there was rather a deficiency of blood, while, in the right side of this organ, and the vessels connected with it, there was an evident accumulation. In the abdomen, the stomach was found greatly distended with air, and containing a large quantity of fluid, chiefly what had been taken as drink. Liver of a purple hue; gall bladder full of dark, green, bile; but no obstruction in the cystic duct; vessels of the small intestines highly injected; the large intestines of a natural appearance, but much distended with air.

In *Donagan*, and the two other cases which terminated fatally, the symptoms and appearances on dissection, were precisely the same. Are these anatomical facts calculated to conduct us to a more successful mode of treatment? The collapsed state of the lungs, and dark colour of the blood, would seem to indicate an accumulation of that carbonaceous matter which is constantly thrown off in the ordinary process of respiration. This idea would lead me to try the effect of the inhalation of oxygen gas, and under the sudden and extremely depressed state of the vital powers, I should be disposed to look for advantage from the powerful stimulus of electricity, or galvanism—The powers of life are, in the disease as it appeared in these men, attacked at once, in their very principle, and sink rapidly from the very first moment, under the irresistible oppression of the morbid cause.

John Fife, Serjeant, aged 28, of a strong robust constitution, and sober habits, was attacked on the morning of the 8th Instant, with a vomiting and purging, which were soon succeeded with excruciating pain all over the abdomen, and a sensation of burning, and twisting, as he termed it, in the region of the stomach; severe spasms of the feet and legs, and intense thirst; tongue white; pulse quick, and rather tense; heat of skin natural. He was instantly bled, in the recumbent position, to the extent of 55 ounces, when he became faint, but felt entirely relieved from the spasms and violent pain of the stomach. He now took the following draught. Mist. Camph. ℥ii Tinct. Cardam. ʒvi. Tinct. Opii gtts. 80 m. ft. h. Ginger tea is ordered for drink, and in half an hour, he was asleep, and continued so, till 2 P. M. when the vomiting returned, with short and difficult respiration, and a livid appearance of the lips and face,—pain and giddiness of head, pulse small and quick, surface warm; no spasms, but an uneasy sensation in his legs which occasioned his moving them continually. Bleeding was again recurred to, and the abstraction of 30 ounces completely relieved his breathing—Pulse, for nearly four hours from this time, was not perceptible, and his feet and legs became cold. He is now placed on the vapour bath, and the following draught given to him. Mist. Camph. ℥i. Tinct. Cardam. ʒv. Tinct. Opii. gtts. 70 Liq. Ammon. Carb. gtts. 40, m. h.—5 P. M. He slept for more than an hour; respiration free;

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pulse small, and soft; skin warm. Stomach still irritable; passed some urine; no motion. An enema is ordered immediately; a blister to the region of the stomach; 20 grains of Calomel; and port wine and water is occasionally drank, as before—8 P. M. He vomited twice since taking the Calomel, but brought up nothing except the drink he had taken. Has no pain, but feels great uneasiness all over his body. Blister has risen well; one motion. The following draught is ordered. Inf. Senna Comp. oz. iii Tinct. Card. ʒiv Spt. Æth Vit. Tinct. Opii aa ʒi—9th, 6 A. M. He slept sometime after taking the draught; had four dark bilious motions; passed urine, which is quite yellow. Pulse better. Tongue loaded, and considerable thirst—feels his head giddy when he stands up. The Calomel is repeated, and the following draught given occasionally. Mist. Camph. ℥i Tinct. Card: ʒii. Liq. Ammon: Carb. gtt. xxv. m. ft.—2 P. M. One dark offensive stool since morning—Complains of straining and griping; Repetat: Haust: Cathart. ut heri. An enema with opium, every three hours.—8 P. M. Six copious motions; still dark and bilious; feels no pain; has taken some sago, and port wine. Mist. Camph. ℥ii Tinct. Cardam. ʒii Spt. Æther. Vitriol, Tinct. Opii aa gtts. 40 ft. H. S. S.—10th, 6 A. M. Had a good night. Pulse improved; skin natural; tongue foul; thirst abated; feels soreness of the abdomen, but the burning sensation has left him. No motion. Repet: Haust. Cathart. ut heri—5 P. M. Four motions of a better appearance; urine free, but high coloured. Repet: Haust: Anodyn. ut heri—11th. 6 A. M. He feels much better--5 P. M. no complaint except giddiness when he stands up—Bowels open; pulse and skin nearly natural. M. Camph. oz i Spt. Æth. Nit. ʒi Vin. Ant. ʒss Tinct. Opii gtts. 30 m ft. H. S. S. 12th—6 A. M. He perspired, freely in the night; feels no giddiness; no motion. Repet. Haust. Cathart.—13th. He complains of pain in the back of his head, and felt considerably more giddiness yesterday afternoon. A blister is applied to the back of the head, and neck. Repet. Haust. Sudorif. h. s.—14th. The blister has risen well. Bowels open—tongue clean; appetite improving. Repet. H. Sudorif.—15th. The blister has relieved the pain and giddiness; no motion since yesterday. Inf. Sen. Comp. oz. ii Tinct. Gentian Cardam. aa. ʒii ft. h. bis in die pro re nata adhib.—16th. Much better, a little giddiness, but no pain. Cont. H.—17th, 18th. Doing well. Cont. H.—19th. He recovered daily to the 28th, when he returned to his duty.

In the more severe form of the disease, which is marked by the violence of the spasms, and excessively excruciating pain in the stomach and bowels, attended generally with vomiting and purging, I have found, both this year and the last, the free and early use of the lancet, produce the best effects; but the relief thus obtained, has not, in any instance induced me to omit the exhibition of laudanum and cordials, and to establish, as early as possible, a free passage through the bowels, which indeed I consider indispensible for the security of the patients. I find the Compound Infusion of Senna with Tincture of Cardamom, admirably well calculated to act on the bowels, sometimes preceded by Calomel. I also use, occasionally, the vinous tincture of aloes, with tincture of cardamom, which I consider an excellent medicine, after the irritability of the stomach has been relieved.

1st November 1819.

One case of Epidemic Cholera occurred last month. The subject of this case, Serjeant *Thrute* of H. M. 34th Regiment, was brought into Hospital at 11 P. M. on the night of the 28th, labouring under the following symptoms. Extremities quite cold; eyes sunk, pulse extremely feeble, body covered with cold sweat, cramp in the legs, recurring at short intervals; vomiting and purging of whitish, watery fluid.—An antispasmodic draught was instantly administered: he was then placed on the vapour bath, and every effort was made to abstract blood, but without success, as no more than 6 ounces could be obtained, when the pulse stopped entirely at the wrist. He became very restless, constantly throwing off the bed cloths, and the vomiting, which had ceased, returned. From this assemblage of unpromising symptoms, there was scarcely any room to hope for a favorable termination. The application however of heat, and frictions, were diligently continued; and cordials were regularly, and carefully exhibited, and about 3 A. M. his pulse became perceptible; the extremities got gradually warm; at 6, A. M. he was in a comfortable perspiration, his voice strong, and his countenance much improved. He is now I am happy to say in a state of convalescence.

It is worthy of notice, that in this case, the irritability of the stomach continued for some time, even after a favourable change had taken place. But I have never viewed the vomiting as a very urgent symptom. Indeed I have remarked that in almost every case, especially among Europeans, when the surface became suddenly invaded with an icy coldness, attended with a loss of pulse, and ghastly features, the early cessation of vomiting was followed generally by a fatal termination.

1st Jan. to 30th June 1820.

The three cases of Cholera which terminated favourably, were attended with quick pulse, severe spasm, burning sensation of heat in the region of the stomach, vomiting and purging of a watery fluid, giddiness and intense thirst. These symptoms were speedily relieved by bleeding and antispasmodics, followed by calomel and other cathartics.

Do cases, attended with arterial excitement such as the above, ever pass into the low or congestive form of the disease? This question has been answered in the negative by some gentlemen, who go to the length of asserting, that white or congee coloured stools, are indispensible to constitute cholera, in the strict meaning of the term; and even affirm, that in the milder form of the disease, the interference of art is seldom necessary.—The affectation of singularity has often indeed forced men on to the adoption of strange opinions; and I cannot but suppose that some such influence has given birth to those just noticed. It is not be denied, that the living system, after being excited into morbid action, passes, perhaps frequently, unaided, through a succession of symptoms into a state of health; but it is equally true, that it oftener sinks in this process, sometimes overwhelmed by the force of its own re-action, and at other times, by certain morbid changes produced in the progress of the disease.

The case which ended fatally exhibited the congestive character from the beginning, and resisted every remedy that was employed. In this stage of the epidemic, we have presented to our view, a train of symptoms stongly resembling the effects produced by the inhalation of noxious gases, and in some points, the operation of certain poisons on the stomach. Hence the remote cause of Cholera might in itself be considered a poison acting directly on the sensorium commune, capable, when exalted to a high

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degree of concentration and malignancy, of oppressing, and destroying the powers of life at the very first instant of attack.

The weather since January has been extremely variable, and much unseasonable rain has fallen, accompanied with a great deal of thunder and lightning; mornings and evenings occasionally hazy, and heavy dews at night for the most part.

Atmosphere partly clear, partly cloudy, tending generally to the latter.—Wind from South West to South East, with very little variation.—From this state of weather an increase of Cholera might have been looked for; but fortunately only a few cases have occurred.—Is there any grounds for supposing that this disposition in the disease to decrease, not only in frequency of attacks but in severity of symptoms, is in any way influenced by the moderate temperature of this, compared with the two or three last years? It is also to be remarked, that the sultry, oppressive heat so remarkable in these periods, have been scarcely felt since January.

The general range of the thermometer has been from 70 to 88, but in a few instances it was down to 69 at 6 A. M. and as high as 92 at 3 P. M.

There is certainly nothing in the local situation of Poonamallee favorable to the production of acute diseases.—It is true, that at this station, in common with every other, the troops are much exposed to a great variety of predisposing and exciting causes; the most prominent of which are, intemperance, exposure to heat by day, and the cold damp air of the night; and I am fully convinced that the operation of the last two, will be always found sufficient to produce inflammation of the large intestines in the young sanguineous recruit.

1ST JULY TO 31ST DEC. 1820.

Cholera,—35 admitted, Dead 3.—Three cases of the low or severe form of the Epidemic Cholera occurred, attended with the usual symptoms. The treatment consisted in exhibiting stimulants combined with opium in the first instance, and employing immediately after the most effectual means of restoring the animal heat, which was excessively reduced, with a small, quick, weak pulse.

For this purpose, heated sand and bottles of hot water were applied to the extremities, abdomen, chest, &c and evidently with great benefit, particularly in two of the cases; not only in raising the temperature, but in relieving the spasms; which were confined to the legs and feet. Mild cordials were also given from time to time as the state of the patients seemed to require; and water acidulated with Nitric Acid, made a little warm, was allowed in small quantities to allay the urgent thirst. Venesection was quite impracticable in consequence of the depressed state of the pulse.—Two of the cases recovered; but the third proved fatal, in despite of every effort to afford relief. In these extreme cases, in which the Causa Morbi is so perfectly overwhelming, would electricity and the inhalation of oxygen gas be productive of benefit? Experience has shewn that the former is one of the most powerful stimulants we possess, and capable of exciting the heart, after every other stimulus had ceased to produce the least effect.

If in this state there should be less carbon thrown off than is necessary to preserve a due degree of purity in the blood, which the dark colour would seem to indicate, it is then probable that oxygen gas might be inhaled with advantage. Has respiration, which is certainly not preceptibly affected, except in a very slight degree, a few hours before death, any share in producing this change in the blood?

The state of the weather at this station, which I consider very healthy, has not furnished me with any observations that appear worthy of being noticed.

1ST JAN. TO 30TH JUNE 1822.

Cholera. In the month of May, twenty cases occurred in a Detachment of Volunteers sent from the camp of H. M. 34th Regiment, near the Mount, where the disease were then prevailing. Two men were attacked on the night of the day the party arrived here, and eighteen others in the six succeeding days. It is worthy of remark, that the disease was entirely confined to the Volunteers, not one case having occurred among the troops belonging to the Depot; although in the same barracks, employed on the same duty, and of course constantly together.

The contagious character assigned to cholera by some medical men, would seem to derive little support from this fact. But if at all contagious, it is quite evident that it is so in an epidemic atmosphere only. The simple disease is clearly not sufficient to propagate its kind; and if this point be conceded, in support of which numerous instances can be adduced, the inference is direct, that it is not transportable, as has been asserted, unless indeed, the epidemic atmosphere, by some ingenious contrivance is also conveyed along with it in the same ship.—Hence the folly of resorting to quarantine observances at the Cape, &c.

The situation of the 34th Regiment at this period, in tents, when the temperature was very high, it must be confessed, was such as to expose the men to every species of intemperance that could tend to create a predisposition to disease; but it was not in any respect different from that of the 53d Regiment in the month of July following; and hence it is difficult to offer any adequate explanation for the invasion of the former Corps by cholera, while not a single case as far as I could learn, occurred in the Camp of the latter. The superaddition of some local atmospheric influence must, therefore, be admitted; an epidemic constitution arising in particular places, at certain periods, and cognizable only by its effects. With the nature of this epidemic influence in the air, which conduces to disease, we are totally unacquainted; neither do we know whether deviation from the healthy condition of the economy is induced by any thing added to, or subtracted from it; and most probably we shall never be better informed on these points.

Of the twenty cases admitted into hospital, eighteen recovered, and two died.

The fatal termination of the first case, created alarm in the barracks, and produced an early application for assistance, in every subsequent seizure; and to this circumstance I attribute in a great measure, the paucity of deaths.

Treatment.—Opium exhibited with stimulants, venesection, mustard cataplasms quickened with oil of turpentine, applied to the region of the stomach, legs, feet, &c. friction and dry heat, infusion of ginger and water acidulated with the mineral acids for drink, followed by calomel and purgatives, &c.

The abstraction of blood was decidedly beneficial when there was a certain strength of pulse and warmth of surface, but I confess it appeared to me in the low cases, where the vital powers were extremely depressed, to be a measure of at least questionable advantage. Engorgement of the large viscera takes so great a portion of blood out of the general circulation, that any loss by venesection is very sensibly felt, causing in some instances, instant and irreparable exhaustion.

ASST: SURG. MACLEAN, H. M. 53D REGT. TRICHINOPOLY, JULY 1819.

Sally Fenton, Ætat. 12, of a full robust habit, was brought to the hospital, on the 18th July at 8 o'clock P. M. was attacked with vomiting and purging of a thin watery fluid about two hours ago ; is at present affected with most violent spasms of the limbs and abdominal muscles ; and roars as if delirious, complains much of pain under the sternum to which she keeps her hand constantly applied, skin cold and clammy at the extremities ; pulse feeble, but distinct at the wrist ; incessant thirst ; a vein in the arm was opened and about 16 ounces of blood extracted ; the spasms came on once during the bleeding, after which the whole body became relaxed ; a profuse flow of perspiration, and a genial glow of heat over the whole surface of the body and extremities came on ; previous to her being bled she had taken, Cal. grs. x. Tinct. Opii. gtts. xxxv. Mist Camph. ℥iss. I remained with her half an hour, she kept constantly calling for cold water, in about ten minutes more she fell fast asleep, and was conveyed from the hospital to her mother's house in a dooly ; well wrapped up in clothes.—19th. On visiting her this morning, says she has no other complaint than pain in the muscles of the abdomen ; slept soundly all night. To have the abdomen rubbed with Liniment Ammon. Camphor.—Evening, was by the stupidity of her mother allowed to take two draughts of cold water, which occasioned a return of vomiting, complains now of great langour, and says she has been much griped since morning. To have a small sinapism to the precordium. ℞ Opii. purificat. grs. ss. Calomel grs. iij. ♍. to take this quantity each hour until four have been given ; should she vomit any of them, to be repeated immediately with the following draught. ℞ Mist. Camphor. oz. ss. Aq. Menth. pip. oz. ss. ♍.—20th. Complains of nothing else than debility this morning, had no return of vomiting since I saw her yesterday evening, bowels rather costive, tongue rather furred, skin moist. ℞ Infus. Rhœi. oz. iss. Tinct. Jalapii. ʒij. ♍. ft. Haust. et. sumend.—21st. Had two motions from the medicine, and says she is quite well ; no medicine.

Mary Williams, a native Portuguese, Ætat. 25, of a robust habit, was brought to my house this evening, 18th July, says that about three hours ago she was suddenly seized with vomiting and purging which has continued since at intervals of about ten minutes or a quarter of an hour ; what is ejected is of a grey muddy watery appearance ; complains of heat and pain in her stomach, and constant thirst ; pulse small and much oppressed, skin quite cold and moist, has not had any violent spasms, has slight cramps in her feet and toes. ℞ Calom. grs. xv. this to be washed down with Mist. Camphor oz. iss. Tinct. Opii. gtts. 60. a vein was opened in the arm, and with much difficulty about oz. xviij. of blood was extracted ; she was then sent home in a dooly to her hut, with directions to take half the above quantity of medicine should the vomiting return, and repeated if necessary.—19th. On visiting her this morning I found her preparing curry for her dinner, and says she has no other complaint than debility ; vomiting did not recur after the first medicine. To take in the evening, Ol. Recini. oz. i.—20th, has no complaint.

Sarah Preston, aged 5 years, spare, weakly habit.—Was brought to the hospital early this morning, 19th July, by her mother, who states that about midnight she was attacked with vomiting and watery purging, which have continued constant all night ; is now quite cold all over her body, skin covered with a cold perspiration and wrinkled ; pulse not perceptible at the wrist, but distinct though feeble at the axilla ; let her body be immediately rubbed dry with warm flannel cloth, pounded chillies and camphor. ℞ calomel grs. vi, tinct. opii gtts. xxv, mixt. camph. ℥ j ♍. ft. haust. st. sumend.—9. A. M. Has had the draught repeated three times, vomiting still continues, and slight spasmodic twiches in her legs and thighs, a vein was opened in the arm but not more than half an ounce of blood could be extracted ; eyes much sunk and very feeble, I have by cupping taken 8 ounces from the chest and right side ; to continue the friction and half the draught as often as she vomits.—1 o'clock P. M. Is at present asleep, had no return of the vomiting since nine o'clock, and has only taken one dose of medicine since ; has been asleep about two hours, pulse just perceptible at the wrist ; skin warmer about the extremities, and dry.—5 P. M. Has not been awake since last visit, feels warm and a comfortable perspiration on her whole body, pulse much better at 98. nil.—20th. Complains much of pain in her stomach and thirst, in other respects doing well, pulse 92, tongue very foul. Appl. empt. Lyttæ infra. sternum. ℞ pulv. rhæi grs. xij, sub. carbonat. potass. grs. vi, ♍. ft. statim.—21st. Is much better this morning, but complains yet of slight pain in her stomach, the medicine she had taken moved her bowels twice ; says her mouth is a little sore, pulse 86, and perfectly regular. Repeat the powder as yesterday—22d. Has no complaint this morning, except the pain where the blister was applied—26th. Has continued well, and allowed to go home this morning.

The diseases during the month of July have varied very little from what I reported in June with the exception of three cases of Spasmodic Cholera, one of which only was treated in hospital ; Opthalmia has prevailed a good deal, but not particularly severe ; in one case only, has there been a partial loss of sight ; he had for several days previous to admission, been in a state of intoxication, and the inflammation ran so high, that the most rigid antiphlogistic regimen, and free depletion had no effect, suppuration and ulceration of the cornea in both eyes, and a protrusion of the iris in the left eye followed ; he is recovering in a slight degree the sight of the right eye, and I have some hope of his ultimately recovering the sight of both eyes.

As to the three cases of Cholera Spasmodica which I have detailed, it is not necessary to say much ; a perusal of them will sufficiently develope that I placed my chief indication of relief in the extraction of blood, and although I have not in these cases, now before you, pushed it to such lengths as on former occasions, the result is obviously much in favour of the system. I have no hesitation in saying, that even in

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the very last stage of the disease, in the robust European, and also the enfeebled native, it should form a principal in our ratio of treatment; no sinking of the pulse or general appearances of debility should deter us. They are the consequences of over action, from an undue quantity of blood being thrown on the abdominal and thoracic viscera, which are relieved by removing the cause. I am of opinion with Dr. Jackson in saying, that by diminishing the quantity of blood, you increase the power of the circulating medium.—In cases where the circulation has not become imperceptible at the wrist, you will observe the change in the pulse almost immediately; (where actual syncope has not come on.) The pulse gains strength, but for some few minutes is much accelerated, and in less than a quarter of an hour after binding the arm up, it moderates in quickness sometimes from 130 to 108 or even 96, becomes more full and natural. The misfortune is, that frequently many of our patients are in a state that precludes all possibility of getting blood from them, when they ask for aid, either from allowing the disease to go on too far, or from its having run a rapid course from the commencement. Thus it was in the case of Sarah Preston, which I have detailed. According to the mother's account, she had been 6 hours ill previous to my seeing her at 6 A. M. No blood could be got from the arm, but by means of cupping and the application of cloths wrung out of hot water, 8 ounces were pumped from the chest and side, and to which I chiefly attribute her recovery; the small number that have come under my care does not admit of my saying much regarding the other treatment of this disease; it has been much the same as I formerly detailed, and I feel satisfied with the result.

DR. DAUN, H. M. 89TH. REGT. QUILON. JULY 1819.

William O'Brien, Ætatis 23, No. 3 Company, 3 years in India, of the middle size; fair complexion; stout make.—Has been brought to the hospital in the dooley affected with cramps in his bowels and legs, and also vomiting of a glary tasteless fluid; has had 2 stools, but was not purged; his pulse is weak, slow, and irregular in the intervals of its pulsation; skin bedewed with cold clammy perspiration, and which on his countenance stands in large drops; great anxiety, and constant change of position: it appears that he was taken ill about two hours ago.—Capiat. statim. Hyd. Submur. ℈i. to be washed down with Mist. Stimul. oz. ss. diluted with warm congee. The above medicines he vomited very soon after taking, upon which they were repeated, and he was put into the hot bath; after which, he was placed on the steam-couch; and the heat applied was the utmost he could bear. His vomiting returned with cramps in an aggravated degree: and the pulse could scarcely be felt at the time; which was about three quarters of an hour after his admission into the hospital; the hot water blister was now applied to the pit of the stomach, and a vein in each arm was opened; but no blood could be made to flow. The pulse at the wrist about this time ceased to beat, and only a very feeble pulsation could be felt in the course of the brachial artery; frictions with dry cloths were assiduously employed from the first; after the application of the hot water blister, a common blister of cantharides was applied to the præcordia; the vomiting; spasms, and anxiety continued, nevertheless, to increase; he complained grievously of the heat employed to recover the natural warmth of his body, which however continued of an icy coldness; with a profuse cold clammy perspiration; his features became much altered, eyes sinking deep in their sockets; 150 drops of laudanum with 2 ounces of peppermint water were given him; but which he soon vomited. The hot bath was repeated, and to the water of which 2 quarts of a spirituous infusion of chillies was added; the water of the first bath having been in a like manner medicated. A table spoonful of warm spirits and water were given him every 2 or 3 minutes; and at $\frac{1}{2}$ past 2 o'clock, 60 drops of laudanum were given: and which were twice repeated at an interval of 15 minutes, on account of the violence of the vomiting, and cramps; his thirst was extreme and incessant from the first; and about this time he expressed a desire for some sour drink; three or four table spoonfuls of water acidulated with muriatic acid were given him; after which there was no return of vomiting, nor of spasms; his anxiety and restlessness however continued to increase, and it was necessary for the assistants to keep him by force on the steam-cot, which, though employed to the last, had no effect in raising the temperature of the body; he began to fall into a lethargic state about 4 o'clock, and continued so till $\frac{1}{2}$ past 7 o'clock P. M. when he expired.

Dissection.—There was some degree of inflammation at the cardiac orifice of the stomach; the liver sound; the gall bladder distended with bile, and the ductus cysticus impervious to the probe.

John Mitchell, Ætatis 45, No. 2. Company, 11 years in India, of the middle size; sanguine temperament. Was brought to my quarters about 20 minutes after 9 this morning (24th July), his countenance had an extremely haggard appearance,—his eyes being deeply sunk in their sockets,—voice very feeble,—the account which he gave of himself, and which was confirmed by the Corporal who accompanied him, was, that he had become unwell soon after he had been relieved from Guard about half past 6; but that the faintness then come upon him, had gone off after a short time upon his lying down on his bed; that he had gone to the necessary about half an hour ago, and had been there found by his comrades in a fainting fit; he said he had no sickness at stomach; no pain in his bowels or purging; and no cramps; he complained of nothing except some degree of *tinnitus aurium*, and vertigo; and which he said was fast wearing off; he affirmed that he felt himself getting every minute better, and could with difficulty be prevailed upon to be taken to the hospital—he accounted for the haggard appearance of his countenance, by stating that he had for some weeks past laboured under great mental anxiety, and distress, occasioned by circumstances which had brought him to a Court Martial.—His skin at this time was cool, but not clammy; and his pulse rather weak, slow, and unequal in the intervals of its pulsation.—A scruple of calomel was immediately given him, and washed down with a dose of the stimulating mixture; his strength did not seem much impaired, he walked without assistance from and to the Dooley which brought him, he was sent off to Hospital, and instructions were given to the Pupils, to attend particularly to him, and if they observed any change whatever for the worse, to report immediately—in about 20 minutes a report was sent me that he had become affected with cramps in his legs, upon which I hurried to the hospital; upon my arrival there I found that he had vomited once; had had one thin stool like congee, and that his pulse at the wrist was not to be felt. I immediately attempted to abstract blood, opening a vein first in

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one arm, and not finding the blood flow freely, then opening a vein in the other arm, but with no more effect than before.—I now determined on opening the external jugular vein, but my attempts to abstract blood were equally unsuccessful here as they had been in the arms; about 20 oz. of very dark blood were abstracted in the course of an hour; he had been placed on the Steam Cot on the first appearance of spasm, and several coolies were kept incessantly rubbing his legs and arms, with stimulating Liniment; the Calomel was repeated; the cramps continued to return from time to time but not in a severe degree; there was however great restlessness, and anxiety; a hot water blister was attempted to be applied, but he resisted its application with so much violence that it could be done only in a very ineffectual manner; a blister of Cantharides was applied over the præcordia; about 20 minutes after taking the last dose of calomel, this medicine was repeated in the quantity of half a drachm, and washed down with two ounces of the Camphor mixture, to which 25 drops of the Aquæ. Ammon. Puræ were added; these medicines were again repeated in half an hour; nothing farther was now done for about an hour, except the continued application of frictions and of heat by means of the Steam Couch; his body however did not recover in the least degree its warmth; the pulsation of the brachial artery could be faintly perceived at times; and it was observed that after the brachial artery ceased entirely to beat, the pulsations of the femoral artery were still perceptible;—the Camphor mixture was given him in small quantities repeated every ten minutes, and at 11 o'clock as he had had only one stool since his admission, and with a view to rouse the vital powers, a stimulating glyster, consisting of congee, 1 pint; spirit of Turpentine, half an ounce; Tinct. Asæfœtidæ, 3 ounces, was administered; this glyster soon returned; and was therefore repeated in about half an hour; the second glyster was retained; about 12 o'clock it was determined to give him of the following solution, 2 ounces every fifteen minutes, till his bowels were moved. R. Magn. Sulphat. oz. iss. solve in Aq. Menth. Pip. tepidæ. ℔ i. et adde Tinct. Sennæ oz. i. M.—He continued to sink; and a short time before his death he fell into a slumber, from which he never awoke—he expired at 1 o'clock P. M.—It ought to be mentioned as a remarkable circumstance in this man's case, that for above an hour after he had ceased to breathe, there was a tremulous motion of the muscles of the mouth, and convulsive motions of the muscles of his legs and feet.

Dissection.—The villous coat of the stomach, for about the breadth of the palm of the hand near its left or larger extremity was drawn into strong elevated circular rugœ; the whole of the internal surface of the stomach was coated with Calomel; very slight degree of redness was observable in one spot amongst the circular rugœ; no other appearance of inflammation was observed in the stomach; the Duodenum exhibited no morbid appearance whatever; the silver probe passed with difficulty into the Gall Bladder, owing to some obstruction in the ductus cysticus; the Gall Bladder was moderately distended with dark ropy bile; but no vestige of bile in the stomach or intestines; the Omentum was inflamed and the urinary bladder lay flat and contracted behind the arch of the pubes; it should be mentioned in detailing the above case, that no urine was passed from the time he was reported sick till his death.

P. S.—It appears by information received since the above was written, that this patient was taken ill as early as four o'clock in the morning, and that therefore the account which he gave of his illness when reported, cannot be depended upon; it is probable that he was tempted to conceal such circumstances as he thought might be the cause of his being taken into Hospital; the Hospital Serjeant had been his prosecutor at the Court Martial, by which he had lately been tried, for crimes committed when holding the situation of Hospital Orderly; and this accounts for his unwillingness to be taken into Hospital, and his delay in reporting himself sick.

Hospital Serjeant *Andrew Murdock*, Ætat. 60—No. 5 Company, 11 years in India.—Above the middle size: fair complexion, of robust plethoric habit.—Half past 7 A. M. Has suddenly dropped down in the verandah of the hospital, in a fit of fainting; on recovering his senses, he could give no other account of his feelings, but that he felt extremely unwell: and that he had a slight degree of pain in the back part of his head; his eyes seemed suffused and watery, and countenance expressive of considerable anxiety: skin rather below the natural temperature, and moist: pulse weak and irregularly intermitting; he has had no sickness at stomach, nor cramps in any part of his body; had one natural stool yesterday evening: knows no cause of his present illness, and felt quite well till the moment he fainted in the verandah.—Mittr. Sanguin. V. S. Capiat statim Hyd. Submur. scr. i.—Sumat mist stimul oz. ss.—Mem. He has been bled to 32 ounces: he appeared to revive in proportion as the blood flowed, while his pulse at the same time increased in strength and size, and regular in the intervals of its pulsations; he has expressed his conviction that the bleeding has saved his life, which from his feelings, though he cannot describe them, he is certain must otherwise have been soon terminated.—8 A. M. He has just been attacked with retching and general spasm of the muscles of his whole body: what he has brought up by vomiting, is glary mucus, which tastes only of the medicine which he has taken: his anxiety has returned: pulse intermitting, and has become again weak.—Skin moist and cool: the venesection in consequence has been repeated, and 36 ounces more blood have been abstracted; the pulse continuing to rise all the time: and the patient expressing himself to be relieved, in even a still greater degree, than he had been by the first bleeding:—he said he did not feel himself at all weakened by the loss of so much blood: a scruple of calomel was at this time given him, and he was ordered half an ounce of Camphor mixture, to be repeated every 20 minutes: also some Arrow Root jelly with infusion of Ginger to be given from time to time. It was proposed to apply a blister to the pit of the stomach but he objected to it at first: he permitted it to be applied about 10 o'clock; he was observed at times during the forenoon to talk incoherently, and the vomiting twice returned: his pulse continues however of good strength: skin bedewed with a profuse and warm perspiration.—At 12 o'clock he took a scruple of Calomel with half an ounce of the stimulating Mixture; slept a good deal in the course of the day, and at 6 P. M. he seemed to be quite out of danger; at this time the heat of skin considerably above the natural degree, with full strong and frequent pulse; having had no stool, a laxative enema was administered, and a solution of Mag. Sulphat. oz. iss. in Aq. Menth.

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Pip. ℔j. was ordered, 4 ounces to be given every hour.—½ past 9 p. m. He vomited the first dose of salts, which were therefore not repeated, and at half past 6 p. m he took Hyd. Submur. scr. i. he has vomited once since he took the Calomel, and he has had two good feculent stools of a whitish colour, and rather costive. —Rep. Hyd. Submur. and Sumat. Mist. Stimul. oz. ii.---Half an ounce of the Drogue Amere was ordered to be given him at mid-night in the event of his having no stool in the mean time; and before going to sleep, was ordered to have his feet and legs bathed in warm water.—26th. He took the Drogue Amere as prescribed, and has had two or three loose stools tinged with bile: complains of nothing except slight head ache and weakness: P. and H. nearly natural: the solution of Epsom Salts, and peppermint water ordered yesterday, are to be given as then directed, viz 4 ounces every hour; his diet to consist of tea, conjee water, or weak chicken broth.---Vesp. Salts have operated several times; stools loose and natural; mouth affected by the Calomel. Omitt. Med.—27th. Is able to sit up: no particular complaint.—Diet as yesterday.—Vesp. Is rather hot and feverish: but he does not feel worse; no motion in his bowels to-day. He is ordered the Pediluvium before going to bed, and to take to-morrow morning the following draught. ℞. Ol. Ricini. oz. i. Tinct Rhæi, Tinct Sennæ. a dr. ii. Aq. Menth. Pip. oz. ij. ℳ ——28th. Physic operated above 12 times: he has no complaint except weakness.—Nul. Med. F. Soup.—29th. Convalescent. F. Soup.—30th. Returned to duty.

On transmitting to the Medical Board the preceding cases, among which there are a few of the Epidemic or Spasmodic Cholera, I beg to give my testimony in favour of bleeding in the treatment of that very fatal disease.—So far as my experience enables me to form an opinion, bleeding, *early and copious bleeding*, is the only means of cure yet discovered on which any reliance should be placed.—The total of cases of Spasmodic Cholera which have occurred in the 89th Regiment up to this date does not exceed eleven.—Of that number five have died and six have recovered.—Of those who have recovered all except one (Reynolds, whose case was given in the Journals for June) were bled copiously, that is to say to 50 or 60 oz.—In those who died either bleeding was not had recourse to or delayed till too late, and when none or very little blood could be made to flow from the incised veins.

In the cases successfully treated by bleeding it was remarked, that the pulse tho' feeble and intermitting, when the vein was opened became stronger and more equal in its pulsations as the blood flowed—the Patients also expressed their receiving the greatest relief from the v. s.

In two cases, the pulse about 20 or 30 minutes after the first bleeding (which was to the extent of 32 oz.) began to sink again, and to intermit, and the cold perspirations and indescribable anxiety peculiar to the complaint to return.—The vein was in both cases again opened and greater relief was discovered from the second abstraction of blood than from the first; an equal or even larger quantity being lost by the second than by the first bleeding.

The case of *Mitchell* strongly exemplifies the necessity of having immediate recourse to the Lancet when a patient is brought with this complaint.—It is much to be regretted that this patient was not bled when he was first seen by me. His pulse was at this time so good that there can be no doubt that the necessary quantity of blood might have been abstracted. In less than half an hour his pulse had ceased to beat at the wrist, and tho' the veins of both arms and the external jugular were then opened, not above 16 oz. of blood flowed in the course of an hour. While I insist thus strongly on the necessity of bleeding in the treatment of the Spasmodic Cholera, I would not be understood to intimate that I have done nothing else, or that nothing else should be done.

From the power which large doses of Calomel certainly possess of allaying inordinate action of the stomach and more especially of the alimentary canal, I am of opinion, that its use should never be neglected; but I have seen enough to convince me that whether given alone or in conjunction with laudanum or spirituous and stimulant preparations it is quite unequal to effect recovery in the great majority of cases. The propriety indeed of giving stimulant and spirituous medicines would seem rather questionable if we consider, that in by far the greater number of cases of Spasmodic Cholera there exists more or less of inflammation and superficial ulceration of the stomach or duodenum, or both.

Seeing that one of the most distinguishing features of the Spasmodic Cholera is the absence of bile in the primæ viæ, those who are convinced as I am of the extraordinary power which Calomel exerts in producing bilious evacuations would naturally resort to its use, with an expectation of its being useful in soliciting a return of the biliary secretion.

With regard to the application of heat in the manner suggested by Dr. Dalton and recommended by the Board, I beg to say (but with due deference to their opinion), that I consider it a very inconvenient, as well as ineffectual mode of producing the desired effect.

I have found it exceedingly difficult so to regulate the temperature to which the patient was exposed while on the steam couch as to produce a sufficient degree of heat such as the patient could bear, without going beyond that point.

My solicitude to produce the intended effect has always made me raise the heat to a degree which the patient could barely endure, yet in no instance have I succeeded in raising the temperature of the patient's body. This appeared to me a very remarkable circumstance in the application of heat as directed by Dr. Dalton. Perhaps it is to be attributed to the very profuse cold perspirations so characteristic of the disease, and which perhaps are still further encreased by the steam couch.

O'Brien lay on the steam couch for 3 hours before he expired, in a heat that I am convinced, would have raised a *lifeless* body to a temperature nearly, if not quite equal, to that of a person in health; but his body preserved an icy coldness to the last.

On these considerations I have been induced in the treatment of some of the cases which more lately occurred, to use heated sand in preference to Mr. Dalton's steam couch.

The heated sand is tied in pieces of cloth forming bundles of a convenient size, with which 4 or coolies constantly rub the body of the patient; the sand being renewed as often as it becomes cold.

The body is thus kept dry, the heat is applied in a way which seems particularly agreeable to the patients, and it is probable that thus applied, it has a less tendency to produce sweating.

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Of the nature of this singular Epidemic I shall not presume to offer an opinion, for I could give none that would have even plausibility to recommend it; a reference to the Register of admissions into the 89th Hospital in July, will shew that the common Cholera Morbus prevailed about the same time that the Epidemic did in an unusual degree, and this fact would indicate some connection betwixt the two diseases. That it was not an accidental coincidence I am the more inclined to believe from having remarked, that some cases were of so ambiguous a character, that it was often doubtful whether they belonged more properly to the Spasmodic or to the common Cholera. In making the distinction and in designating the cases accordingly, I have been guided chiefly by the presence or absence of bile.

If the evacuations either upwards or downwards shewed the presence of that fluid, I have called the case Cholera Morbus. If no bile was discoverable, and there existed at the same time a state of asthenia, I have given it the name of Spasmodic Cholera.

In every case of recovery from Spasmodic Cholera, a state of re-action has followed the asthenic state, in which there was generally a redundancy of bile, and to my mind this fact appears to countenance the opinion, that there exists an affinity betwixt the two diseases.

As to the contagious or non-contagious nature of the disease I shall not give an opinion.

Such as embrace the former opinion would see in the following fact a confirmation of their belief.

On the 10th when in attendance on *O' Brien* I became indisposed in such a way as to lead me to apprehend an attack of the Epidemic. On the 12th, Mr. Gray was attacked after having been up part of the night with Thomas Flannigan.

Mr. G. was during his illness constantly attended by Lieutenants S. and McD. who have since had both of them attacks of the Epidemic, and no other Officers except them at this station have been attacked.

Perhaps also this opinion might seem to receive some additional confirmation from the fact of Serjeant *Murdock* the Hospital Serjeant being attacked; and that Corporal *Irwin* was the Non-commissioned Officer in charge of the convalescent's ward, and by his duty required to be present twice daily in the Hospital, and consequently must have been nearly as much exposed to the influence of contagion (if the disease really be contagious) as Serjeant *Murdock*.

Surg. S. Dyer, Tellicherry, 20th Sept. 1819.

Mr. O. Master Attendant of Tellicherry, about 40 years of age, rather thin, but generally a healthy man, was attacked sometime in the morning of the 14th September, with purging, vomiting of a thin watery fluid, and other symptoms of the Spasmodic Cholera. From his peculiar habits, it was not known whether he had been previously unwell, or whether he had suffered at all in the night. He quitted his house as usual, between 4 and 5 o'clock A. M. to take his morning walk, accompanied by two or three Native boys; they observed that he was sick, vomited several times on leaving the house, and twice went out of the road to stool; notwithstanding, he continued his walk, and did not return to his house, till about 7 o'clock.—He was in the habit, after these diurnal walks, of cutting wood for a time, by way of exercise; then to bathe in cold water, and afterwards to take his breakfast, consisting of tyre, with a little rice, and tea sweetened with honey. He did not, on this occasion, bathe, but called for his breakfast, which he attempted to eat, but it was immediately thrown up. He continued however, chopping the wood for nearly half an hour, and during this interval, went several times to the necessary.—He now desired his servant to bring some milk which he drank, but it soon caused sickness.—The man observed at this time, a change in his countenance; he was giddy, and with some difficulty he reeled towards the stairs leading to his bed room, and with assistance, he got to his bed. He now vomited several times, and was in great pain; but would take nothing, and ordered the servants to quit the room as he wished to be quiet. The people however, hearing his groans, and the sickness continuing, they became alarmed, and called a friend of his who lived near, who prevailed on him to take a little brandy and tincture of gentian, and soon after sent for me.—I was from home at the time, but hearing of the circumstance I hastened to the house, and arrived at ½ past 11. The worst symptoms of the Spasmodic Cholera were but too evident in his countenance; he was sitting on a chair, supported by his servants, apparently just having recovered from a fainting fit; he said he was now easier, but complained of a burning heat at the stomach, and begged for cold water. His countenance was collapsed, eyes sunk in their orbits, surrounded with a dark livid circle, voice shrill, and scarcely audible, no pulse to be felt at the wrists, or temples; the extremities, and the body generally quite cold, and covered with a clammy sweat; the ends of the fingers were contracted, and the nails blue; the spasms were not general, but he complained of an indescribable pain of the hip joints; breathing hurried; tongue of a peculiar white.

As there was a Medicine Chest at hand I gave immediately, Tinct. Opii. gtts. lx. Ol. Minth. Pip. gtts. x. in a little brandy and water; and opened a vein in the right arm. The circulation however had ceased, and only a few ounces of blood could be extracted, which had merely filled the vein. Notwithstanding he was so cold, he complained of a burning heat of the whole body, and begged that the windows and doors might be opened. He was restless, and constantly moving about, but had no return of sickness. Frictions were used with hot spirits, and blankets being tied round the cot, in the way recommended by Dr. Dalton for the vapour bath, chatties of charcoal, were placed under the bed, till the apparatus for the bath came. At 12 o'clock, he had not been sick at stomach, but otherwise there was no change for the better. A bolus of calomel gr. xv. was now given, and washed down with a little warm brandy and water. Two vessels for the vapour bath were now placed under the bed, and in the smaller of each, vinegar, camphor, and opium were placed. He complained much of the heat and was so restless that we could not keep the spirits ignited under him, more than a quarter of an hour. I now opened another vein in the opposite arm and made a large orifice; the blood did not flow readily, but about ounces vi. came away, very dark, and almost immediately it became coagulated; he was covered up warm with blankets. 1 o'clock he had frequent inclination to vomit, but nothing was thrown up; the retching caused great pain, and spasms of the abdomen. He voided about a pint of thin

Surgeon S. Dyer, Tellicherry 20th Sept. 1819.

watery fluid, and about 4 ounces of thin limped urine were passed; no pulse to be felt, and all the symptoms much the same. A hot bath was by this time ready, but he could not be prevailed on to go into it; the heat of it, though reduced by degrees to 90, was such to his feeling, that he said it would scald him; his feet were repeatedly put into it at this low temperature, and he instantly withdrew them, saying that he was burnt; he was again placed on a dry cot, and covered up, the hands, feet, and body, having been previously rubbed with brandy. ℞. Haust. c. Tinct Opii. gtts. lxxx.—2 o'clock. He had been rather easier the last hour, but the countenance was of a deeper purple, the voice less audible, breathing difficult, no pulse, and the coldness the same. He had not been sick at stomach, but a quart of the same dirty fluid had been voided by stool. He had taken a little warm brandy and water, to wash his mouth, but swallowed none, as he said it burnt him.—Rep. haust. c. tinct. opii. gtts. lx.—3 o'clock. He had been very uneasy the last hour, and rolled about the bed, complaining of a burning heat of the stomach; other symptoms the same. The ligatures had been kept moderately tight on the arm, and about 8 ounces of blood had passed from one of the orifices, in appearance, the same; but this afforded no relief. His breathing became more oppressed, and he now groaned in agonies, begged that the doors and windows might be kept open, as he was in a burning heat, and about 4 o'clock he expired. On a review of this case it will appear evident, that the remedies were used too late. All the worst symptoms of Cholera were present, and had existed some hours before any assistance was given.—The vapour bath, which, to the natives generally affords ease by its warmth, was to him, most painful, and could not be endured; perhaps had this been used earlier, the effect might have been different, as it is probable, gastritis, or enteritis had taken place, for the vomiting was not very troublesome, after I saw him, and the quantity of watery evacuation was less than usually takes place in the latter stages of the disease. The spasms were not so severe as I should have expected in a European; I was present when he voided the urine, and though the water from the intestines gushed out as if thrown from a syringe, the urine passed without pain or strangury.—His thoughts appeared greatly confused; though sensible, he could not give me a connected account of the attack; the voice was scarcely audible, and it appeared painful to him to speak. The body was not opened.

Mr. O. was a man of extraordinary habits; he associated but little with the Europeans of the place; he never drank wine or spirits, nor for years had he eat animal food; his clothing was very thin, and in the worst of our seasons, he usually walked 20 miles a day. For several successive days he would remain in the interior of the country in the jungle, and, while on these excursions, to visit the poor, give medicine to the sick, and assist them with money, he took only a mat and cumbly, and slept in the verandah of a native's hut; his food, when on these rambles, were vegetable curries; and for drink, he took cold tea, made previously to his leaving home; he returned only on Sunday from one of these tours, and when I met him at a Poor Hospital, which he had established, he seemed to look pale, but did not say that he had been ill; he had been most successful in curing the Cholera, and was of opinion, that when remedies were early used, there was but little danger; had he applied this practice to himself he would probably now be living.

Garrison Surgeon J. Annesley. April 1819, Madras.

John Keliher, Gunner Ætat. 23, of a robust habit. Admitted in the evening of the 22d of April, with a slight affection of the chest, which was relieved by the application of leeches, and purgatives; on the 25th he became convalescent. 26th April at 8 o'clock A. M. attacked with general debility, a considerable degree of coldness, and a profuse clammy perspiration all over him. Pulse feeble, pain in his head and vertigo; tongue rather furred, but moist; no stool since last evening—he feels extremely sick at stomach, but has had no vomiting or spasms; says he voided his urine very well in the night, till about 6 o'clock this morning, when he walked outside the ward, and was obliged to return immediately, in consequence of a considerable degree of weakness attacking him, and he felt no other alteration till this moment, when the above symptoms seized him—his eyes are sunk, and his countenance collapsed with a good deal of anxiety about him. ℞. mist. camph. oz iss. spt. æther vit. ʒss. ol. menth. pip. gtts. x. M. ft. haust. stat. habeat enema purgans stat. appl. hirud. viii utrique temp. covered with cumblies, and warm flannels applied to his arms, chest, and extremities.—20 minutes past 8 o'clock, skin quite warm, his pulse 80 in the minute, and pretty firm, passed a copious stool, *fœculent*, and of a bright yellow colour, has taken a cup of tea, and he feels considerably relieved.—Vesp. hor. 4. Has had one copious fœculent, and offensive stool, since last report, of a light brown colour; no vomiting or spasms, pulse 56 and rather small, skin natural—complains of pain and lightness in his head, tongue clean and moist, but somewhat furred and white; no thirst; took some soup for his dinner, his countenance and the appearance of his eyes are more natural. Rep. hirud. viii. utrique temp. ℞ hydr. subm. ℈j. opii. gr. ij. syr. q. s. ft. pil. stat. sum. habeat potu acid nitric. ad libitum. 27th. Pain in his head relieved by the leeches, though he still feels some lightness in his head, griped considerably in the night, no stool since last report, tongue moist and pretty natural, pulse 64 in the minute and pretty firm, skin of a natural heat, no particular thirst. ℞ mist. purg. oz. ij; tinct. cardam. oz. ss. M. ft. haust stat. sum. habeat enema purg. quam primum. Sago for his dinner—Vesp. purged freely, and his stools are morbid, tongue clean, skin and pulse natural. ℞ hydr. subm. dr. ss. pulv. antim. ℈j. pil. aloes c. colocynth. dr. j. syr. simp. q. s. ft. massæ et in pilul. xx. dividend. quarum sumat j. ter die. ℞ infus. gent. oz. xij. sennæ oz. vj. tinct. cardam. oz. iij. M. ft. mist. cujus. oz. iij. nocte. maneque—28th. No stool since last evening, tongue clean at the tip, but foul towards the root, pulse firm and regular, skin natural, no head ache, but he complains of vertigo, otherwise free from pain, no thirst, appetite pretty good. Cont. med. ut heri hab. enem. purg. stat. necnon applic. hirud. vj. utrique tempori.—29th. Head quite relieved, pulse 56 and firm, but not full or oppressed, skin natural, tongue looks much better, no stool since last evening, thirst left him, and his appetite is very good.—30th. Convalescent.

Remarks.—I had not left this man's cot 15 minutes when he was attacked; he did not complain of any thing, but I thought I observed a languidness about him, and more moisture on his skin than could be well

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accounted for ; I put several questions to him as to his general feelings, but to all he gave general answers, that he felt *very well but only weak* ; his appearance to me was what I have often felt, and seen in others, when the stomach was deranged, and nausea but not vomiting produced. I have no doubt but the incipient stage of cholera was upon this young man at the very time I was talking to him, and although he could not express what he felt, yet there was in my mind something so unaccountable, that my attention was particuly directed to him, and I was quite prepared for some change, though I confess cholera did not occur to me at that time ; fortunately the symptoms were met at once and overcome, otherwise I have not the slightest doubt, that if this young man had not been watched, and the symptoms immediately attacked that it would have been a regular case of cholera, and the result perhaps doubtful. It is not often a medical man sees these cases in an incipient stage ; I consider the present case therefore, as one of peculiar interest, which I have great pleasure in forwarding to the Medical Board.

James Lynch, Private, H. M. 84th Regiment, Ætatis 30, a strong, robust, healthy man, seldom in the sick report, but much addicted to drinking spirits.—23d May, was perfectly well, and eat a hearty dinner at 2 o'clock P. M.—At 3, he went with some others to bathe in the Surf, and while in the water, was seized with vomiting of bilious matter, of a green colour ; in a few seconds he was attacked with purging, and the stomach and intestines seemed completely emptied, as he only passed latterly small quantities of white watery fluid like congee water.—He was in tents on the South Beach, and it appears nothing was done for him till very late in the evening, when he was brought to the Garrison Hospital between 6 and 7 o'clock P. M. accompanied by Dr. Walker, Surgeon of H. M. 73d Regiment, who has been appointed to take medical charge of that part of H. M. 84th now on the Beach to proceed to Europe.—At the time he came to the hospital, I was engaged with a very difficult obstetric case, and could not leave my patient, but Dr. Walker, and Mr. Conwell who was also present, gave stimulants with opium, used friction, warm bricks to the extremities, and had opened three veins in the arm.—When I saw him there was no pulse at the extremities, he was covered with a cold clammy dew, features sharp and eyes sunk, excessive thirst, and constantly calling for cold water ; breathing exceedingly difficult, and no heat about any part except his chest and head which were considerably above the natural temperature. Shewed no signs of vomiting or purging, but his limbs and body were tortured by spasms; blood came from his arm, what oozed out was black, thick and ropy ; he was put into a warm bath, warm spirituous applications were applied to his body and extremities, both upper and lower ; a glass of warm brandy and water was given which he drank with avidity, and a stimulating enema after he was taken out of the bath.—Sinapisms to his extremities were also applied, he was covered up in cumblies, heat applied under the bed, and frictions were continued.—About 40 minutes past 7 his breathing became exceedingly short, quick and laborious, he was insensible, and died about 8 o'clock ; five hours from the first attack.

Examination after Death.—On laying open the abdomen, the arch of the colon was found to be considerably contracted, the stomach distended to a very large size, the small portion of the liver that was visible, of a pale brown colour, and the Omentum very fat, covering the small intestines.—On removing the omentum, the whole of the small intestines exhibited a very singular and unusual appearance ; they were much thickened in their coats, and pulpy, as if filled with pultaceous matter.—The duodenum and jejunum of a light rose or flesh colour, the intestinum ileum was darker, but the same hue, and much contracted ; about two feet of the lower part of this intestine nearest the cæcum was found to be of a dark blue cast, and the vessels on the external coat beautifully injected.—The small intestines were laid open, their coats much thickened, and contained thick pulpy and tenacious mucous of a milky colour.—Although there was considerable congestion on the external coats of the small intestines, there was not the least appearance of congestion on the internal coats of either the duodenum or jejunum, and only on that part of the intestinum ileum which, I have already noticed, was of a dark blue cast, the mucous coat of which was purple, and which we distinctly traced to be venous congestion.—The external coat of the colon the same colour as described in the small intestines—this gut was laid open, the cæcum and head of the colon perfectly natural, but from the commencement of the great arch to the rectum, the whole internal coat was of a dark red colour, which redness increased as it approached the rectum.—The intestinal canal was found completely without fæces.—The stomach being laid open, the lower part near the pyloric orifice was found to be much corrugated, of a very dark colour, with dark bloody spots between the coats—the pylorus of a red gelatinous apperance, and rather of a brighter colour than the part described above.—The liver was not enlarged, but at the superior convex surface of the right lobe, it was of a purple and *mottled* hue, and at the inferior concave surface of the same lobe, a dark blue colour, which on being cut into, bled freely, dark coloured blood !—I examined the gall bladder and biliary ducts; the former contained about *two* ounces of bile of a dark green colour, but not so thick as I have seen it, nor was the gall bladder much distended with bile, but there appeared to be a constriction (perhaps from spasm) on the mouth of the common duct which prevented the bile from passing, without very considerable pressure on the gall bladder, when it forced its way out with a jet, and afterwards flowed from the duct with ease.—On raising the lungs from the thorax, I found some adhesion to the pleura costalis.—The whole of the posterior portion of the lungs, had precisely the appearance of a solid mass, of bruised bloody flesh, and when cut into, had a flesh like structure, bled profusely, dark coloured blood, and seemed to have completely lost the character and structure of lungs.—The blood vessels of the pericardium turgid, very little water contained in it.—The heart collapsed, particularly the right ventricle, no blood in it at all, valves natural.

Head.—The dura mater transparent and the vessels very turgid.—Between the tunica arachnoides and the pia mater, on the middle lobe of the right hemisphere was found a considerable effusion of dark coloured gelatinous bloody lymph, as if a severe blow had been inflicted on that part, and on the left side the same appearances existed, only in a lesser degree—the vessels of the pia mater were exceedingly turgid and of a much darker colour than I have ever seen them before.—The appearances were exactly the same as are found in apoplectic subjects.—On removing the pia mater, the brain was found soft and pulpy, very

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little water in the lateral ventricles.—The vessels of the choroid plexus exceedingly turgid, giving it a dark brown apparance very different from its natural and healthy state —The vessels of the cerebellum precisely in the same state of congestion, and those which surround the pons varolii and medulla oblongata were likewise highly injected.—A small quantity of water was found lying in the cerebellic cavity and head of the spine.

Cheurg Mootoo, Sepoy, 2d Battalion 6th Regiment N. I.—A strong healthy man, about 43 years of age; had lost his leg at the battle of Mahidpoor ; 25th May. Was perfectly well this morning at 7 o'clock, and conversed with me some time about his stump. At 10 he was attacked with vomiting and purging, pain at the navel, and cold skin, pulse scarcely to be felt, a cold dew over his whole body, countenance collapsed, shewed great anxiety and distress without expressing any feeling of pain, and when I asked where he felt pain, he drew his finger round the navel and said, here ! The scrobiculus cordis, umbilicus and chest were immediately rubbed with the following mixture : ℞ Acid. Nitros. dr. iij. ; Aq. Puræ dr. iss. ♍ (this is said to have been found extremely useful in these cases as a quick and effectual way of producing a blister) ; it smarted a good deal but did not blister, in consequence of which, a large mustard sinapism mixed with vinegar was laid over the whole, and the following draught given. ℞ Spt. Æther. Vitriol. dr. i. ; Tinct. Opii. gtts. c. ; Aq. Cinnamom ; Aq. Puræ aa oz. j ♍ ft. haust. ; warm friction and hot bricks were applied to his foot and hands.—11 o'clock. Passed a large evacuation of pure unmixed healthy bile, no fœces ; retained the draught upon his stomach, pulse quite gone, skin covered with cold dew, no possibility of producing heat, very thirsty ; warm brandy and water is given to him frequently, with care not to make him sick, and he is put into the vapour bath.—He is sensible of heat and moves about a good deal, but there is no change whatever in the heat of his skin ; feels spasms in his leg extending from his hip to the foot ; apply embrocation of Spirits of Turpentine over the whole limb.—The Spasms are relieved, he calls for congee water, which is given, mixed with brandy, a man sits by him and gives a little at a time in spoonfulls to prevent his taking too large a quantity at one time which would make him sick.—12 o'clock. Makes signs that he feels easier, but no warmth can be produced on the skin which is still covered by cold dew, eyes very much sunk, can only see the white of the eye, distressing anxiety in his countenance, nothing like pulse either in the wrist or heart, breathes with difficulty but does not complain. Repetatur Haustus u. a. An opiate enema was given which was immediately rejected without an effort,—but the draught remained on his stomach ; he calls anxiously for congee with brandy. Frictions continued, and the vapor bath again repeated.—1 o'clock. Is not so sensible to heat as he was, made a slight effort to vomit, but did not throw up much; I have not gained an inch upon him; tried Leeches to his head, they would not bite ; opened a vein; no blood ; in this way he continued using the means above described till 3 o'clock, when he thought himself easier, and asked for Mulligatanny ; I could not observe any improvement whatever in the state of his pulse or skin, and he died before the Mulligatanny could be got ready.

Examination after Death.—On removing the parieties of the abdomen, the jejunum appeared much inflated, rising above the other intestines, and throwing back the omentum and colon—In this intestine there was a considerable degree of congestion and several spots of a red and dark bruised appearance. About the commencement of the intestinum ileum, the gut had a thickened pulpy feel, and was of a darkish pink or flesh colour ; but the lower part of this intestine on being removed from the pelvis was found less pulpy, more natural in its coats, of the same hue as described above, but a lighter pink or flesh colour. On laying open the duodenum to examine the state of the biliary ducts, the mouth of the ductus communis choledochus was sufficiently open to admit the point of a probe, but the bile did not flow from the gall bladder without considerable pressure. The whole of the small intestines were laid open from the duodenum to the cœcum. In the duodenum and jejunum there was considerable congestion found both externally and internally, but the congestion appeared to exist in the cellular connection between the muscular and mucous coat.—Blue and red colored spots were observed in various parts of these intestines corresponding precisely with the spot he complained most of pain in, when he was first attacked.—There was not much congestion in the ileum, a kind of rose colored blush pervaded the whole of that gut, but I should not say there was congestion.—The colon was partially contracted throughout its course, but on laying it open, there was not the least appearance of congestion either on the external or internal surface.—The stomach was distended with watery fluid, the vessels of its peritoneal coat very little different from the natural state, but there was considerable congestion on the internal coat about the cardia and pouch of the stomach, and this congestion is evidently confined to the vessels of the cellular substance connecting the muscular with the mucous coat.—The liver not much enlarged, but of a dark blue colour and bled freely on being cut into.—The gall bladder was not unusually full of bile, and what was discharged was healthy.—The lungs collapsed, of a black colour on both sides like a mass of bruised flesh, and when cut into had a fleshy firmness, and bled very profusely.—Right auricle and ventricle full of blood, and both the superior and inferior venæ cavæ loaded, and in the left auricle and ventricle a small quantity of black blood.

The Head opened.—The dura mater transparent, the meningeal arteries and veins exceedingly turgid both in their trunks and branches,—On separating and removing the dura mater about six ounces of watery fluid was found between this membrane and the tunica arachnoidea.—In the anterior portion of both hemispheres of the cerebrum there was the appearance of considerable arterial action—the arterial branches spread over that part of the pia mater were highly injected with red blood ; the large veins spread over the posterior portion of the cerebrum were likewise highly injected with black blood, and upon the middle lobe of both right and left hemispheres, there was a kind of red gelatinous extravasation as if some severe injury had been inflicted.—The vessels of the pia mater were in general exceedingly turgid and infinitely more dense than in a healthy state, uniting and obstructing from view the corpus callosum, and requiring some force to separate it so as to expose the corpus collosum.—Very little water in the lateral ventricle and the choroid plexus though very turgid still retained its beautiful appearance, on raising the fornix from the velum interpositum.—Some effusion was found in the cerebellic cavity and top of the spine, and a very great turgescence of the vessels surrounding the whole of the cerebellum, the pons varolii, the medulla oblongata, and all the nerves which rise there.

GARRISON
SURGEON
J. ANNESLEY, 1819,
MADRAS.

George Parnell, Private H. M. 13th L. D. admitted 24th June 1819, at 11 o'clock P. M. with severe cramps at the stomach and legs, pulse rather small but quick; he was bled by the Surgeon of the corps, 24 ounces of blood were taken from the arm, and an anodyne draught before he left the barracks. ℞ Tinct. Opii. Spt. Æther. Vitriol. aa. ʒj. Aq. Puræ. oz. j. M. ft. haust. Stat. Sum. Rub his legs, belly and hands with Spts. Terebinth. and apply 18 leeches to his stomach.—The leeches would not stick on his stomach.—½ past 11 o'clock, apply 24 leeches to the nape of his neck.—12 o'clock, cramps still continue, no relief from any thing that has hitherto been done. Repetatur Haust.—½ past 12 o'clock, cramps and pain in the belly still the same.—Apply over the whole abdomen strong mustard sinapisms.—1 o'clock A. M. free from pain and fast sleep. Slept till 5 o'clock. A. M. no pain or spasms, but is excessively heavy, pulse 120 in a minute, great stupor, pupils of the eye much contracted and cannot bear the light, does not take notice of any thing, and dislikes being spoken to; skin warm and rather dry.—Apply 36 leeches to the temples, back of the head and neck. V. S. oz. xl. Enema Purgans.—Shave the head and apply cold vinegar and water.—6 o'clock, pulse the same, strong and full, no alteration whatever, the pupils of the eyes so contracted that they are hardly visible, there is, I fear inflammation in the brain. V. S. oz. xl. Enema Purgans. Cold application to his head.—7 o'clock, excessive anxiety and great oppression in his breast, nausea and sickness at stomach, excruciating pain in his head, face flushed, lips swelled, the vessels of the tunica conjunctiva injected.—Continue cold applications to his head and repeat the Leeches.—8 o'clock, excessive intolerance of light, he has now lost 80 ounces of blood, and not the smallest impression on his pulse, vomits whatever he takes, pulse amazingly strong and firm.—Blister the stomach. Repetatur Enema Purgans. Continue cold application to the head. V. S. oz xxxii.—In this bleeding he opened his eyes and could look with less pain at the light, but there is great stupor and excessive pain. Blister the back of the neck.—9 o'clock, pulse still strong and full, but he is less sensible, remains in a comatose state, and died at ¼ past 11 o'clock, A. M.

Examination after death.—The intestines were distended in an extreme degree with flatus, no congestion, and none of the pulpy appearances in the intestines already described.—The stomach is large, and all the contents of the abdomen exceedingly pale.—The liver has no congestion, in fact it is pale and exsanguineous, the gall bladder full of dark bile.—The lungs natural, but rather empty of blood than otherwise, heart natural.—In the head there is no congested appearance of the veins, they are rather empty, while the arteries of the pia mater are beautifully injected with vermilion colored blood, and the section of the brain shews evident marks of high inflammation in the brain which the intolerance of light and pain in the head indicated.—There is a little water in the ventricles.—But there is sufficient to account for death in the marks of inflammation on the surface and in the substance of the brain.

Mrs. Sparling, a healthy woman of a spare habit, Ætatis 36, June 1, 1819.—Was attacked suddenly this morning about ½ past 9 o'clock, with violent and acute spasmodic pains about the lower part of the belly and legs; she was covered with cold clammy perspiration, tongue excited, not dry, pulse small, frequent and very weak, vomiting and purging of watery fluid, eyes sunk, and great expression of anxiety and fear in her countenance; was reported to me 10 minutes before 10 o'clock.—A vein was immediately opened; and the following draught given. ℞ Tinct. Opii. Spt. Æther. Vitriol aa. dr. i. Aq. Cinnam. Aq. Puræ, aa. oz. j. M. ft. haust.—On opening the vein the blood did not flow free, it was black and sizy, and only oozed out in drops; by friction however, it came away with more freedom, and as it flowed from her arm, she expressed the relief it gave her.—When sixteen ounces were drawn she had a return of the spasms, and the blood ceased during the continuance of them.—After they left her, I found a coagulum had filled the vein, and that the blood would not flow; pulse very weak and small, introduced a lancet again and a small thread of blood followed, I then pinched up the vein and removed a large coagulum which completely filled the orifice and prevented the blood flowing.—Sixteen ounces more followed this, which continued to relieve her, and she felt no sensation of faintness or sickness at stomach. She was covered with cold dew, but expressed great relief as the blood was flowing from her arm.—The blood now began to change from a black and sizy condition to a more florid and fluid state and six ounces more was allowed to flow.—½ past 10 o'clock, spasms continue in her legs and feet, but by no means like what they were, pulse softer and fuller, 96 in a minute, complains of considerable pain and spasmodic twitchings about the lower part of her belly. Rub the extremities with Spirits of Turpentine, constant shampooing, Enema Domestic. oz. iij. c. Tinct. Opii. dr. j. add. Bottles filled with warm water applied to her feet.—½ past 11 o'clock A. M. much better in every respect, free from pain and spasms, skin cold and clammy, feels lightness in her head, considerable thirst, tongue dry and very white, pulse quick and sharp, 106 in a minute, very thirsty, a little warm brandy and water was given and the following mixture.—℞ Mist. Camphor. oz. iij. Spt. Æther. Nitros. dr. ij. Aq. Ammon. dr. j. M. ft. Mist. Cujus Sumat. coch. j. magn. 2da, vel 3tia, q. q. h.—3 o'clock P. M. no return of spasms, but complains of sharp pain at the epigastric region and round the umbilicus.—Apply 8 large leeches immediately upon the part she complains most of pain in.—Continuetur Mist. u. a. 5 o'clock P. M. leeches bled very freely, pain much better, skin hot, and a clammy feel upon it.—Warm congee water is given occasionally.—6 o'clock P. M. complains very much of acute pain at the crown of her head, not general, but in one spot, and great weight and pain at the base of the skull, lightness in the head, and imperfect vision.—Let her head be shaved immediately and apply five leeches to the spot she complains of pain in, and five more at the base of the skull; these bled very well and completely removed the pain.—9 o'clock P. M. perfectly easy, thirst less urgent, pulse 102, skin moist, no pain of any kind, has not had a motion since morning.—℞ Calomelanos gr. x Opii. puri. gr. j. ft. pil. stat. sum. She was put to bed well covered, and

Garrison Surgeon J. Annesley, 1819, Madras.

two attendants to watch during the night—2d, 6 o'clock A. M. passed an excellent night, was not at all disturbed, spasms all gone, felt an inclination twice in the night to relieve her bowels but could not, tongue foul and white, pulse 90 in a minute, skin moist and warm, head light, but no pain, that which she complained of at the crown of the head and base of the skull completely removed by the leeches. ℞ Olei. Ricini. oz. ij Aq. Minth. pip. oz. iss ♏ ft. haust. stat. sum. Enema Purgans.—At 12 o'clock, her bowels fully emptied, evacuations yellow color, tongue still white and dry. ℞ Mist. Salin. lb. ij, Aq. Ammon dr. ss. Spt. Æther. Nitros. dr.ij. ♏ ft. Mist. Cujus sumat. oz. ij. 3tia vel. 4ta q. q. h.—5 o'clock P. M. Pulse very quick, 120 in a minute, skin cool and natural, no pain of any kind, has been purged four times and passed dark colored slime in the last stool, tongue cleaner, very little thirst.—Continuetur Mist. u. a. Pilul. Calomel gr. x. h. s. s. Arrow root—3d. Passed an excellent night, no pain at all, the Calomel acted slightly on her bowels, and brought away some dark colored slime ; pulse small, skin warm, tongue clean and moist. Repetatur Oleum. Ricini. u. a. Repetatur Enema Repetatur Mist. u. a.—Vesp. Medicine has operated well, no pain, tongue clean, pulse good—no mdicine—4th. Passed a restless night, feels weight and pain at the lower part of her belly, tongue clean, pulse regular, 88 in a minute. Enema Purgans ℞ Olei. Ricini. oz. j. Aq. Menth. pip. oz iss. ♏ ft. haust. s. s.—Vesp. Well and copiously purged, much better this evening —5th. Perfectly well this morning, took a purgative occasionally for a few days, applied a warm plaister to her belly, and had no return.

In forwarding these Cases * of Spasmodic Cholera which were received and treated in the Garrison Hospital during the months of May and June, I feel it but justice to myself to state, that in all those which terminated fatally, with the exception of one man (Mootoo), the Patients were past the power of human art when received into Hospital. None had been ill less than 5 or 6 hours, and many 8 or 10 before I saw them—All the means however within my reach were tried, the Vapour Bath, Friction with Spirits, Stimulants, Antispasmodics, &c. &c. but without effect—and I confess it was a matter of deep distress to me to see so many men sent into Hospital to die.

It has given me however the opportunity of examining the bodies after death, and those examinations have led me to a practice which, I am happy to add, has been attended with the best success.

I have succeeded almost in every instance by bleeding where it could be practised, but I doubt much whether blood can be drawn after the patient has been ill more than two hours—the grand object therefore is to attack the disease at as early a period as possible, and if bleeding is had recourse to within one hour, I should entertain a very sanguine hope of success.

The appearances on dissection were uniformly the same, possessing precisely the same character, and differing only in degree according to the strength or vigour of the patient ; indeed to see one was to see the whole !

I have not time at this moment to enter at large into this extremely interesting subject, my present object is to state facts for the information of the Medical Board, and not to travel beyond them.

The cases are all honestly and faithfully told, using as nearly as possible the language of the patient in describing the symptoms, and without attempting to ornament or embellish them ; they will therefore, I hope, be received and treated by the Board with candour and indulgence.

In support of the Practice of bleeding, the accompanying Extract from the Medico-Chirurgical Journal and Review for October 1817 may be satisfactory, upon which however I must be permitted to observe, that in place of Syncope being produced by bleeding in the cases which I have treated, the pulse has invariably improved, and the feelings of faintness and debility disappeared.

Let me not however be misunderstood, by supposing, that I intend to say I have succeeded alone by bleeding without other aids—I merely wish to state that bleeding in the early stage removes spasms, prevents venous congestion, and gives that salutary check to the progress of the disease which enables us to treat it ; and here it may not be improper to observe, that after the debilitating symptoms of Cholera are checked by bleeding, a re-action frequently takes place, to overcome which, requires the greatest attention. See the case of Sparling, p. and Parnel, p.

In every case venous congestion was manifest, and appears to have been the immediate cause of death.

The right auricle, the venæ cavæ superior and inferior, and all the large veins.

The liver, the spleen and the brain are all loaded with venous blood, and even where blood is found in the arteries, it is black.

From which, it appears to me, that the circulation is not checked till the blood is returned to the lungs, where from some change produced, perhaps in the air cells of that organ, it becomes stagnant.

The pulmonary arteries are loaded, and the veins instead of returning florid blood to the heart, contain black venous blood,—which seems to be rejected by the left auricle, and here the stop to circulation takes place.

The arterial action consequently, from the want of its proper stimulus, ceases in the extreme vessels and the skin becomes cold.

In short, from the examination of 14 cases, all which were in their leading features alike, there is a complete stagnation of blood in the veins, the removal of which seems to me to be the principal indication of cure.

Want of power then in the heart or lungs, or perhaps in both, would appear to be the immediate cause of this dreadful and destructive disease, and whether this is occasioned by any change produced in the blood itself in its course through the vessels to the heart, depriving it of its power as a stimulus to that organ, or, whether any atmospherical change takes place, depriving the lungs of the power of performing their functions, are questions in my opinion, deserving attention. But in submitting these cases to such high authority, it would be presumption in me to venture upon any speculative opinion. I confine myself therefore, merely to the detail of facts as they occurred, leaving to others better qualified, to explain the

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* 27 Cases.

remote cause of this formidable disorder, what change takes place, and how that change is produced which deprives the lungs of the power of preparing the blood for the purposes of life, and thus deranging the general balance of circulation.

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At a future period, when my time may be less occupied than it is at present, I shall probably enter more fully into this matter. The loose observations I now throw together are merely the outline of my view upon the subject; but what I have stated will, I trust, justify the grounds upon which my practice has been founded.

Bleeding in severe Cholera.—" Extract of a letter from J. B. Sheppard, Esq. of Whitney, " Oxfordshire, to Dr. Johnson.

" Your account of Dr. Moulson's paper brings to my recollection a practice somewhat analogous " (though with a different intention) which I pursued during a short service in the Brazils, a few years " since, in the violent form of Cholera, which seems to be endemic there. You have, I believe, described " a similar disease in India under the name of *Mort de Chien* in which you recommend bleeding, with " other remedies; but I have now reference only to the notes which I made of your book, and therefore " am not positive.—In more than forty cases which came under my care, during the four months we were " in the harbour of Rio Janeiro, and on the coast, I found bleeding to *syncope* instantly and uniformly " successful *alone*.—There was no critical biliary discharge, but the disease was removed before the arm " was secured, and no subsequent medicine was required. The intestinal spasm was far more violent than " any I had ever witnessed in the West Indies (where the disease is pretty severe), and bore a strong " resemblance to the convulsive paroxysm; so much so, that I was generally called to a man said to be in " fits; and the powers of several men were required to restrain them. The first cases I treated by warmth, " frictions, volatiles and opium, but did no good, until I adopted the plan I have mentioned, which, in " no instance, disappointed me; the variations of temperature in that climate are extraordinarily great, " frequent and sudden; and to such mutations the prevalence of intestinal spasms may be ascribed."

1820.

M. C. Mayne, Serjeant Major, Ætatis 28, entered 25th April 1820.—Of an ordinary temperament. Was brought to the hospital at 20 minutes before 2 o'clock P. M. in the last stage of Cholera Spasmodica. He had been taken ill about 11 or 12 o'clock at noon in the Town Major's Office, and twenty ounces of black blood had been taken from his arm by Mr. Bush, of the 46th Regiment, and a cordial draught was given to him by Mr. Heward, viz. Tinct. Opii. Spt. Ammon. Aromat. et Mist. Camph. When he arrived at the Hospital his pulse had entirely left his extremities, and his legs, arms and body were covered with cold clammy perspiration, with that peculiar cadaverous smell which is usual in the most fatal of these cases; his eyes were sunk in their orbits, and there was a peculiar sharpness in all his features, indicative of general collapse and great danger. His nails turned perfectly blue, the skin assumed the peculiar livid colour, which is common in these cases, and the palms of his hands and soles of his feet were blanched and shrivelled as if they had been soaked in water for a considerable time. The cramps in his legs were very severe, and he complained of a sharp burning kind of pain at the præcordia and some uneasiness in his head. He has been purged very often (15 times) and his stools are watery like congee water. Tongue not much excited nor dry, but he complains very much of incessant thirst and excessive restlessness. ℞ Calomel gr. xx Drog. Amer. ʒss. Mist. Camph. ʒss. Ɱ. This was swallowed immediately and washed down with some warm brandy and water. His extremities were well rubbed with Spts. Terebinth. Sixteen leeches were applied to his temples, and twenty to the præcordia.—2 o'clock P. M. Respiration tolerably free, has neither been vomited or purged since admission—spasms in upper and lower extremities extremely severe, the livid colour of the whole surface of the body as well as the extremities increased. Stimulating Enema, he takes warm brandy and water occasionally, and frictions are continued to his extremities.—¼ past 2 o'clock. Passed the enema but no fœces, the spasms are not at all relieved, the leeches have fixed upon his temples, and præcordia. Continue frictions.—½ past 2 o'clock. The leeches are doing their duty admirably, he is not so restless or so thirsty, the spasms have left him, but his skin continues cold, and there is no appearance of return of pulse. Continue frictions.—3 o'clock P. M. No return of vomiting or purging, but there is not any kind of improvement in his skin or pulse, he appears inclined to sleep, thirst less urgent—complains of a good deal of pain over the whole belly; the leeches are still doing their duty, his tongue is more excited than it was, but it is moist. Apply a large blister over the lower belly; warm flannel to be continually applied to his extremities, and the following draught ℞ Mist. Camph. oz. iss. Aq. Ammon. gts. xxx. Spt. Æther. Vitr. gts. xx Ol. Menth. pip. gts. iv Ɱ ft. haust.—¼ past 3 o'clock. Has a slight return of spasms in his left leg. Continue frictions.—N. B. The leeches have fallen off from his temples, and the blood from their bites as black as ink.—20 minutes past 3 o'clock. Has become more restless and thirsty (calls for conjee water which is given with brandy.) Has just passed a watery colorless stool, respiration rather hurried, no pulse, coldness of the skin and lividness increased. Complains of pain, *but does not know where!* Has for the first time expressed fears of his situation. The leeches are still drawing at the præcordia. Continue warm frictions with flannel.—40 minutes past 3 o'clock. He is asleep, breathes free, and there is a gentle warmth returned to his skin, but no pulse. Continue warm frictions with flannel.—4 o'clock P. M. Slept for 15 minutes, says he feels tightness over his belly, and thinks it is the leeches; he has again become restless and calls for cold water; he evidently despairs of his recovery, no pulse, though his skin is certainly warm. A little diluted Nitric Acid to drink, Rep. Haust. Camph. c. Drog. Amer. ʒss. continue warm flannel.—25 minutes past 4 o'clock. The skin is certainly much warmer, and there is considerable less lividness on the surface, and no cold sweat, but there is no pulse either at the wrist or in the temples; he is less restless, his eyes appear less sunk and more animation in them; he is perfectly sensible, does not complain of pain in his head, though there is more *heat* than natural; his breathing more hurried than it was, though he does not complain; he is very thirsty. Apply 12 leeches to his temples, a little warm brandy and water.—5 o'clock P. M. Skin very comfortable but no pulse, says the blister is very painful, and he is becoming again restless, but he is certainly more collected, and there is less anxiety about him than he had

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one hour ago. Continue warm flannels to his extremities and chest. The leeches have fastened on his temples but do not appear to fill well, and those at the prœcordia do not appear to be very useful. Wishes for some warm tea which is given to him.—$\frac{1}{2}$ past 5 o'clock. No material change of any kind; finds the Nitric Acid drink very agreeable. ℞ Calomel grs. xv Opii. grs. iij. ft. pil. ij stat. sum.—6 o'clock P. M. Restlessness increased, heat on the surface much improved but no pulse; breathing becoming more hurried, no return of spasms, purging or vomiting. Continue warm application as before. He got worse from this time; his breathing excessively hurried and oppressed, very great restlessness, heat about the head very much increased; he became insensible at $\frac{1}{2}$ past 6 o'clock, and died about 10 minutes before 7—N. B. The warm flannels were certainly attended with more benefit than I have ever witnessed from the vapor bath. The extreme coldness and clammy perspiration which isso common in this disease and particularly at this stage of it, had nearly left him; his skin had more a natural heat than I have ever seen before in Cholera. The leeches on the prœcordia did not fill, the blood which flowed from the bites was quite black.

DR. IRVING, 3D OR GOLUNDAUZE BATTALION ARTILLERY, MOUNT 1820.

Mootoosawmy, Æt. 28, Private, admitted 5th June 1820. A spare muscular man, brought into hospital about 6 o'clock this evening, having had frequent purging of watery, mucous looking evacuations since the morning, accompanied with some nausea, but no vomiting; passed a stool of the above description after his admission; complains of a sense of great weakness, depression of spirits, langour, and excessive thirst; also vertigo ever since the commencement of the attack; feels pain across the epigastric region, with an uneasiness, or rather weight about the chest; breathing appears short, and oppressed; some heat about the trunk, but the extremities are cold, and bedewed with clammy perspiration, also face, and upper part of the breast; jactitation, and incessantly throws off the bed-clothes; features rather sharp; eyes somewhat sunk; urine suppressed; tongue dry, and furred towards the base; pulse very quick, small, and tremulous.—Habt. stat. submuriat. hydrarg. gr. xv. superbib, haust. sequen. ℞ Mist. Camph ℥ij. Aq. Amm. Aromat. gtts. xxv. Tinct. opii. gtts. xxxv. Ess. Menth. piper. gtts. xx. ♏ fiat haust. Emitt. e brach. sang. ad. ℥xvi. Uti frict. c. pann. lan. per. tot. corp., et later. calid. admot. sunt. extrem., iterum iterumque habeat decoct. oryzœ pro potu.—8 P. M. Medicine retained; was seized with syncope when the quantity of blood directed was taken away and the arm bound up, which was removed by the use of stimulants; says he is altogether more easy, and found relief after the blood had run a short time—no return of purging; nausea gone, thirst rather less, voided a small quantity of urine, pulse risen and less quick; scarcely any giddiness, and breathing seems more free; skin still covered with perspiration but in a less degree, and lower extremities continue cold. Continuentur applic. ut antea. ℞. Mist. Camph. ℥ij. Tinct. opii. gtt. xxxv. Tinct. Castor. Spir. Lavend. C. Spir. Æther. Nitros. aa. ʒss. Spir. Amm. Aromat. gtt. xx. ♏ fiat. haust., stat. sumend., et repet. post. hor. duas. am. submur. Hydr. gr. viij.—6th. Cold perspiration gradually abated, and the circulation returned to the extremities in the course of the night; passed a blackish looking stool at 5 o'clock this morning—complains just now of griping about the umbilicus, and heat at the prœcordia; skin regained its natural warmth, thirst nearly gone, tongue clean and moist, except towards the base, pulse 80 and more firm, urine high coloured—Sumat. stat. pulv. Jalapæ ʒss. submuriat Hydr. gr. vi.—7th. Passed a good night; had several evacuations, and voided some bilious stuff, accompanied with a little griping, and rumbling about the bowels. P. 82. skin natural; Capt. Inf. Gent. C. ℥ij. ter de die.—8th. Is at present free from all complaint, except weakness; had one stool yesterday evening, of a natural appearance—Cont. Inf. Amar. ut heri.—9th. Discharged, convalescent.

Gugiah, Æt. 30, Private, admitted 9th June 1820. A tall muscular man, was brought into hospital at a quarter past 5 o'clock this evening, when he was immediately seized with syncope; his attendants say he had frequent vomiting of watery fluid, and passed two stools of the same description since 11 A. M.—The above symptoms were preceded with vertigo and some degree of deafness, which still continues; since his admission vomited twice some glairy fluid, but no purging, great prostration of strength, sense of burning about the pit of the stomach, respiration anxious and slow, sensorium seems affected, eyes hollow, and the balls have a glittering appearance, distressing thirst, no urine passed since noon, tongue tremulous, pulse not perceptible at the wrist—Habt. Stat. Submuriat. Hydr. gr. xv. et postea, Haust. c Mist. Camph. ℥j. Spt. Amm. Aromat. gtt. xxx. Tinct. opii. gtt. xxxviii. Ess. Menthæ pep. gtt. xxv. Detract. sang. stat. ad ℥z. xvi. e brach. Frict. cum. pan. lan., et lat. cal. adm. sunt. Extrem. Habt. decoct. oryzæ cal. et spt. pro potu. vel. Thea. Aromat.—6 P. M. Was cut twice and great difficulty in getting blood, pulse emerging, rather more collected, body regaining some degree of warmth, extremities still cold; seems restless, and has a great desire to sit up; thirst continues urgent, with some degree of nausea; part of the draught was rejected almost immediately after being swallowed; blood of a very dark colour. Cont. Frict., Lat. Cal. et pot. ut. antea, ℞. Mist. Camph. ℥ij. Spt. Æther. Nitros. Tinct. Castor. Spt. Lavand. C. aa. ʒss. Tinct. opii. gtt. xxxv. ♏ fiat. haust. stat. sumend. et. rep. omni bihorio, si opus sit.—8 P. M. Feels easier, breathing free, voice stronger, extremities less cold, perspiration not so profuse, thirst still urgent, pulse 92, rose after the bleeding. Sumet Submur. Hydr. gr. viii. Superbib. haust. ut. ult. prœscript. contin. alia ut antea.—12 P. M. Vomited the draught, after which pulse became very quiet and feeble; ordered a little hot brandy and water which the stomach retained; uneasiness about the lower part of the abdomen, which was relieved by hot fomentations; and during their use, passed a small quantity of high coloured urine. Habt. Decoct. Oryzæ cum Spt. Æther. Nitros. pro potu ordin. Rept. alia, nisi Submur. Hydr.—10th. No vomiting since last report, thirst less urgent since mid-night; the cold sweating has been gradually abating since the same time, and is at present quite free of it; pulse fell off at various times during the night, but at present is 106 and more firm; skin warm, had some Jalap and Calomel about two hours ago which was rejected. Sumat. Submur. Hydr. gr. vi. opii. gr. ss. ft. pil. stat. et. rept. tert. q. q. hor. don. alvus solut. et. secret. bil. promov.—11th. Had an evacuation of a blackish colour since last report, and thickish consistence, also passed some urine; complains of pain about the scrobiculus cordis; pulse 100 and rather small, thirst increased. Rept. pil. stat. cui add Extr. Colocynth. C. gr. xij.—12th. Had three evacuations from the pills, and passed a quantity of billious matter; gums appear tender; pulse 96; complains now chiefly of weakness. Sumat. Inf Gent. oz. ij. ter in dies.—13th. Mouth has become much affected by the Mercury, and there is a deal of ptyalism; in other respects better. Utt. Gargar. Rept. Inf. Amar. ut heri.– 14th. Mouth better, and feels stronger; P. 80, skin natural. Cont. Gargar. et Inf. amar. ut. antea.—18th. Discharged, convalescent.

Dr. Irving,
3d or Golundauze
Battalion
Artillery,
Mount
1820.

Shaik Buckthaver, Æt. 37, Havildar, admitted 25th June 1820. A short muscular man, apparently above 37 years of age. Was seized about 10 o'clock last night with vertigo and vomiting, succeeded by langour and weakness almost immediately; since which he has had five evacuations, and frequent vomiting of watery matter; immediately on admission vomited some thin whitish looking fluid, sense of general weakness all over his body, uneasiness or rather oppression about the chest, breathing tolerably free, giddiness still continues, moderate heat about the surface, with the exception of his feet and hands which are cold; partial cold sweats about the lower extremities, great inclination to vomit, excessive thirst, eyes rather sunk, features seem sharp, made no urine since he was first taken ill; what he passed then was small in quantity, and high coloured; pulse 118, small and rather weak. Tongue furred; was brought to Hospital between 6 and 7 o'clock this morning. Capt. Stat. Submur. Hydr. ℈i. Superbib. Decoct. Oryzæ oz. ij. Spt. Lavand. C. Spt. Æther. Nitros. Tinct. Castor. aa. ʒss. Tinct. opii. gtt. xl. Ess. Menthæ ppt. gtt. xxv. ♏ ft. haust. Habt. Decoct. Oryzæ calid. et Spirit. pro potu. Later. calid. admovr. extrem. et uti frict. c. panno laneo per tot. corp.—Noon. No amendment; rejected the draught shortly after taking it—had it repeated, but the greater part was again thrown up; appears more restless, cold perspiration getting more general, breathing quickened and short, thirst very urgent, pulse falling off. Rept. Medicament ut antea, sinc Tinct Castor.—3 P. M. Nothing remains on his stomach, symptoms much as before. Habt. submur. Hydr. grs. vi, Opii grs. ss. tertia q. q. hora. Omitt. haust et pot. Cont. alia ut antea.—7 P. M. Pills retained, cold clammy perspiration increased, difficulty of breathing, pain on the right side of the epigastric region, and sense of burning about the stomach, other symptoms still continue, pulse hardly to be felt. Miss. Sang. e. brach. ℔ iss. Impon. vesicat. mag. part. dol. Rept. Pil. et haust ut antea, si sit necess. Habeat. decoct. Oryzæ et spir. in nocte.—26th. On opening a vein in the right arm, no blood would flow; left fomented with sponge soaked in hot water and then a vein opened, when a thick dark coloured blood issued, and coagulated immediately; much friction used to the arm to promote the bleeding; often expressed the relief he felt in his breathing and giddiness, during the time the blood was flowing, pulse rose after it; blister has risen well, nausea still continued after the blood was taken away, but his stomach did not reject either the pills or the draught; had an evacuation of a dark watery appearance, and voided small quantity of urine about 12 o'clock last night; this morning complains of great weakness and restlessness, skin still cold and clammy, pulse slow and low. ℞ Extr. colocynth. C. Submur. Hydr. aa grs. xij ♏ ft. Pil. stat. sumend, superbib. Spirit ℥i.—6 P. M. No evacuation from the pills, cold sweat diminishing slowly. Injicr. Enem. comm. stat. Habeat Pil. c. Extr. colocynth. C. grs. viii. Submur. Hydr. grs. vi. h. s.—27th. Glyster returned immediately, but he had several dark watery stools in the course of the night, perspiration much abated, thirst not so urgent, pulse 100, soft. Habt. Pil. Submur. Hydr. grs. vi. h. s.—28th. Had several blackish coloured stools amall in quantity at a time, and complains of griping while they are passing, pulse quick, and more strong, skin warm, thirst gone, no inclination for food. Sumat. stat. Inf. sennæ. ℥iv. Inf. amar. ʒiii. Sulph. sodæ ʒii. solve.—29th. Infusion operated freely, and passed a quantity of bilious matter; free of cold sweating, pulse 92, skin regained its natural heat, redness about the gums and swelling. Rept. Pil. Submur. Hydr. h. s. Capiat. Inf. Gent. ℥ii, ter quaterve in dies.—30th. Gums sore, some ptyalism, pulse 100, complains chiefly of want of appetite and weakness. Omitt. Pil. scol. contr. Inf. amera ut antea. Uttr. Gargar. sœpe in dies. Habt. juscul. bovi. ℔iss, in dies, donec rob. est.—July 7th. Discharged, convalescent.

Shaik Boodain, Æt. 29, admitted 25th June 1820, was brought into hospital between six and seven o'clock this morning, having had frequent purging of watery mucous looking stuff since midnight, and vomited frequently something of the same appearance on being first taken ill; but he now only complains of nausea; giddiness preceded the attack and still continues, sense of universal weakness, spasmodic catching about the fingers and toes; breathing short, some heat about the trunk, but his extremities feel cold, face and forehead covered with cold perspiration; and on taking hold of wrist to feel the pulse, skin communicates a chilly sensation, cutis about the face, hands and feet corrugated, eyes sunk and glistening appearance, features changed, excessive thirst, mouth dry and clammy, no urine voided since he was taken ill, pulse at times not to be felt, passed a whitish watery looking stool during the time he was bleeding—V. S. stat. e brach. ad. ℥xvi. Capt. stat. submur. Hydr. ℈i superbib. haust. sequent. ℞ Decoct. Oryzæ ℥ii. Spir. Lavand. C. Spir. Æther nitros. Tinct. castorii. Tinct. opii, aa. ʒss. Ess. menth. ppt. gtts. xxv. ♏ ft. haust. Admov. frict. assid. per tot corp., et later. calid. extrem.—Noon. Blood very black and coagulated immediately on issuing from the orifice, great difficulty in getting it to run, arm fomented with sponge steeped in hot water, so as to remove the clots which form over the orifice, pulse returned after some blood was taken away, and had a distinct and rather full beat; no return of purging, still restless, and some difficulty of breathing. Admovr. Empl. Canth. mag. præcord. ℞. Submur. Hydr. grs. vi. Opii grs. ss. ♏ ft. Pil. tertia quaque hor. sumend. Rept. Haust. si opus sit.—6 P. M. Complains now of hunger and weakness, in every other respect better. Rept. Pil. ut. antea.—26th. Blister rose well, and had an evacuation of a blackish colour, and also voided a small quantity of urine last night; other symptoms improving. Capiat Submur. Hydr. grs. v, stat. et post hor. duas, Inf. Sennæ. ℥iv, Sulph. Sodæ ʒii, Tinct. Aromat. ʒiss. ♏ ft. haust.—27th. Had several stools from the medicines; complains of some degree of vertigo this morning, pulse 88, skin rather hot; in every respect much better. Habt. Submur. Hydr. grs. vi, h. s.—28th. Had two evacuations of a bilious nature; blister very painful; in every other respect improved. Sumat. Inf. Gent. C. ℥ii ter in dies.—29th. Blister discharging freely, and is less painful. Rept. Inf. Amar. ut heri.—30th, improves. Contr. Inf. Amar. ut antea.—July 5th. Discharged, convalescent.

Dr. Campbell, H. B. Jaulnah, 1st July 1820.

Captain *P.* of a plethoric habit, and in general enjoying the best health, complained on the 9th of June, of being bilious; was advised to take a dose of Calomel at bed time, but neglected to do so. About 2 o'clock in the morning of the 10th, was seized with griping and purging, in consequence of which, he was exposed to an extremely cold bleak North West wind, in the frequent visits he was obliged to make to the necessary, without any additional clothing to his sleeping dress. Towards morning the purging ceased, and he slept a short time; at 7 A. M. he felt well, but took a dose of Cheltenham Salts—at 8 A. M. after taking a cup of tea, was attacked with vomiting, followed so rapidly by all the most violent symptoms of the Epidemic, that he had scarcely time to retire to his bed room. Mr. Surgeon Macdowal who lived in the next house, was immediately sent for, and administered the usual remedies, after opening a vein, with slight relief to the symptoms. At 9 A. M. I received the information of his illness, and found him in the advanced stage of the disease; his eyes sunk, and hollow, expressive of great anguish, and despair; the eyelids purple; the pulse scarcely perceptible; his voice, (naturally sonorous and powerful), feeble, and husky. Painful spasms in his limbs, which were damp and cold; the skin of the fingers and toes shrunk and corrugated, as if steeped in water for some days. He had had no vomiting and purging for some time—the veins of the arms were again opened, but the blood would scarcely flow; the draughts were repeated, his limbs were rubbed with large bags containing hot salt: for this purpose 10 people were employed constantly. About 10 A. M. his eyes brightened, his pulse became more perceptible, he expressed himself as feeling better, and begged the hot frictions might be continued as "they did him good," and he "liked them much." In a short time after this, he made a violent involuntary effort to evacuate the bowels, and a few drops of white water only were ejected; his pulse immediately stopped, and he became dreadfully restless. In addition to the remedies he was taking, an opiate enema was preparing, and cajeputi oil to rub over the epigastrium, when he suddenly turned over to his right side, drew a few long slow inspirations, and died about ½ past eleven.

1821.

On Sunday the 13th of May 1821, about quarter after ten o'clock A. M. I found Captain *W.* labouring under an attack of "Cholera Epidemica," without his having any suspicion of the nature of his disease, though by his own account, the purging and vomiting, had continued from before day break until then. His eyes, and countenance had those very peculiar appearances, so highly diagnostic of this disease; his pulse at the wrist perceptible, but hurried, small and easily compressed; he complained of great exhaustion; had not been seized with cramps, nor any burning sensation about the precordia. While I was preparing some medicine for him, he had an evacuation of white semi-opaque fluid; and on lying down again, he took the following draught. Tinct. Opii. gts. lxxx. Pulv. Ipecac grs. xxx. Aquæ ℥ss.—This remained on his stomach for about 20 minutes, during which time, he remained quiet and easy. About 11 A. M. by a sudden spasmodic effort, evacuations took place from his stomach and bowels, and he was instantaneously seized with cramps in his fingers, followed rapidly by similar ones in his toes; eighty drops of laudanum were immediately given and his limbs rubbed with bags containing hot sand, while I opened a vein in the arm; on puncturing the vein, the blood thick and black, flowed in a large stream, slowly over the arm, until about 24 ounces were abstracted, when it suddenly stopped, on the recurrence of an involuntary evacuation per ano, and a violent cramp in his thigh; his pulse now became imperceptible, at the wrist, and temple; he got restless, and agitated; cold sweats broke out over his body, and the thirst was most urgent. A draught containing one drachm of æther, and sixty drops of laudanum, was exhibited during the preparation of a large dose of Calomel, and extract of Colocynth, a remedy recommended by a Medical Gentleman present, as having proved very useful lately in his practice. The frictions were continued. The patient retained the bolus and other remedies on his stomach; his pulse became again perceptible at the wrist, the spasms ceased; but the restlessness and anxiety increased; his limbs and forehead were bedewed with a cold clammy sweat, and the spasmodic action of the intestines continued. The spirituous vapour bath, having been got ready, by the advice of the Staff Surgeon, was used and persevered in, but seemed to have little or no effect on the vital powers; the carotids being the only arteries in which any thing like distinct pulsation could be felt. After being exposed to the action of the bath for a considerable time he expressed a desire to sleep, and the spirits were withdrawn; he continued quiet for a few minutes, when the spasms returned, accompanied by the other symptoms—the Æther and Laudanum were repeated, and he was again subjected to the action of the vapour bath, but had scarcely felt its influence, when he leaped out of bed, being seized with a fit of spasmodic asthma to which he had been long subject, fell back into the arms of a gentleman near him, and died in a short time after.—P. S. A sinapism, with garlic and vinegar, was applied to the epigastrium.

Surgeon T. Sergeant, Madras, 11th Nov. 1820.

I have the honor to communicate for the information of the Medical Board, the circumstances connected with the death of Lieutenant Colonel M.—7th November 1820 about eleven o'clock A. M., the Colonel sent for Mr. Assistant Surgeon Knox, who was in the adjoining house—he stated that he was purged and felt inconvenience from debility—Mr. K. observed the sunken state of countenance, and the patient complained of deafness; eighty drops of laudanum with some peppermint and brandy were given—Mr. K. observed some water mixed with small fœculent particles in the pan; the patient complained of nausea; a dose of calomel was proposed but postponed, from the patient's fear that it would be rejected; Mr. K. quitted the house for a few minutes, and on being called back, found the patient had vomited the contents of the stomach; the laudanum was repeated, Mr. K. had left the room, and on re-entering found the patient, who was in the act of changing his dress, sitting on a chair with the head drooping on the chest, and some fluid on his dressing gown and shirt—he stated that he was not sensible of what had happened: he was laid down and covered; at this time, about noon, Mr. Heward arrived, who urged the taking forty drops more laudanum, which the Colonel had hesitated in taking; nitrous acid was applied to the region of the stomach, and hot sand with friction applied generally—Mr. White and I arrived shortly after, and the case was witnessed by us all to its close—the prostration of strength, clammy sweats, and imperceptibility of pulse, precluded the possibility of using venœsection with any effect—Laudanum, ammonia, and brandy with infusion of ginger, were frequently given, and an opiate injection thrown up, but without beneficial effect; a large watery evacuation was passed; he had occasional cramps, and towards the close, some uneasiness or pain in the stomach; the patient expired at 7 P. M.—The body was examined by me on the following morning in the presence of the Superintending Surgeon, and there was not an appearance of disease in the thorarcic or abdominal viscera; a remarkable feature in the case was the absence of what I have heretofore viewed as an invariable symptom of the disease, the intense burning heat in the stomach with insatiable thirst—It is ascertained that the bowels had been disordered the whole of the previous day.

SURGEON
T. SERGEANT,
MADRAS,
11TH NOV.
1820.

James Radcliffe, Æt. 13, a thin, rather weakly boy, belonging to the Male Asylum, was seized with looseness of his bowels about nine o'clock this morning, and passed three stools, within the space of half an hour—he was in consequence brought to the hospital.—The last discharge was found to be of a whitish, mucous appearance; he complained of griping in his bowels, and soon after his admission, he became sick, and vomited a small quantity of undigested rice. His general health did not appear to be materially affected—Half an ounce of the antispasmodic mixture* was immediately administered; this was soon rejected by a recurrence of the vomiting, but a second dose given a few minutes afterwards, remained on the stomach, though, without affording him much relief—At 11 A. M. he had severe spasms in his bowels; he became very restless, and a short time afterwards, suddenly voided a small quantity of whitish, turbid fluid, mixed with numerous mucous floculi; the discharge was followed by some temporary ease; he also passed urine about half a pint, and apparently of a natural colour; the countenance had now assumed a very unfavorable aspect; the natural warmth began to leave the limbs, and he complained of cramps in his legs; the pulse had sunk considerably in strength; had 10 grains of calomel; a draught with 20 drops of laudanum, and afterwards some brandy toddy given to him; turpentine frictions, along with the spirituous vapor bath, were also used.—Noon. No return of vomiting; he is however evidently worse; the cramps continue to recur in the lower limbs, and occasionally, with considerable violence; his whole body is covered with a cold clammy sweat; the eyes have a dead glassy appearance, and there is no pulsation to be felt at the wrists, or ankles; he complains of a sense of heat in the bowels, and of intolerable thirst; belly soft, tongue blanched, and dry in the middle, voice little altered. Haust c. æther sulphur. ʒi. spt. ammon. aromat. gtts. xxv. decoct. oryz. oz. iss. et post hor. ij. repetr. decoct. oryz. ad libitum habt. pedibus sinapism qm. pm. applics. frict. deinde, et stat vapor. spirit. adhib. repetentur.—3 P. M. Has had two more discharges from his bowels, of a clear, watery appearance (with few floculi), and in very small quantity.—They were preceded by severe spasms in his bowels and legs; 15 drops of laudanum were in consequence added to the last æther draught; is now rather easier, and seems to be drowsy. The pulse became perceptible, and continued to vibrate for some time after he took the draught with æther. The beat returned after the second draught, and there is still a little undulation to be felt in the artery. The hands are cold; the fingers shrivelled, as if lately dipt in hot water; thirst very urgent. Haust c. Æther. sed. c. M. xl. solummodo repetr. continr.—4 P. M. Has for some time been entirely free of gripes and cramps, and apparently slumbering; the eye-lids being only half closed; circulation in the limbs as before; skin cool, and feels like that of a dead body; countenance cadaverous; is quite sensible; respiration scarcely at all oppressed. Continr.—5 P. M. Little alteration. The beat of the humeral arteries can be distinctly felt, though it is excessively small and feeble. Repet. Haust. Continr.—7 P. M. Pulsation at the wrist, and the cuticular circulation over the body, appear to have entirely ceased; the intellect is now disturbed, but he is still able to answer questions; breathes heavily, and frequently moans; belly soft, but slightly inflated; retains the power of deglutition, and the tone of voice is wonderfully strong. Sinap renovr. Vesicat in reg. Epigast. imponatur. Aq. Cardiac. tepid. Habt. He expired without a struggle a litle after 8 P. M.

DR. P. SCOTT,
MADRAS,
14TH FEB.
1821.

Cadaveris Inspectio.—Circumstances prevented the body from being opened, till sixteen hours after death.—No putrefaction however had taken place;—The stomach and intestines were first minutely examined, but with the exception of a little venous congestion about the former organ, there did not appear to be any material deviation from the natural, healthy state.—The omentum was extremely vascular, and consisted only of a very small, thin web. Several contractions were found in the great arch of the colon; its cœcum was unusually large.—The surface of that portion of the stomach and duodenum contiguous to the liver, was stained (as is frequently observed in dead bodies) of a deep orange colour. The internal surface of the stomach and duodenum was loaded with viscid mucus, without any appearance of bile. In the ileum were found several lumbrici of a very large size.—The liver, in respect to size, colour, and structure, appeared to be perfectly sound. The gall bladder was nearly full of bile, of the usual consistence, and of a dark olive colour. The bile flowed on dividing the cystic duct immediately above the ductus communis, and on examining the parts after their removal from the body, the biliary passages were found to be quite free. The bladder was shrunk into a very small size. The right lung had contracted numerous, and strong adhesions to the pleura costalis. There was no extravasation of lymph however, nor any marks of recent inflammation to be perceived. The liquor pericardii amounted to about two ounces. The right auricle, and ventricle, were full of dark, grumous blood, and this was likewise the case, with all the large venous vessels in the thorax, and abdomen, particularly, in the former.

Remarks.—I have seldom met with a case of the Epidemic Cholera where opium was early

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* Prepared agreeably to the Rp. of the Medical Board.

Dr. P. Scott, Madras, 14th Feb. 1821.

administered, which proved so severe, or so intractable as that now detailed. Mild and without spasms in its early stage, it appeared suddenly to assume a most violent form, and to bid defiance to all the remedies which were employed.

The nervous system appeared to be disordered immediately after the vomiting took place, and it is not improbable, I think, that the powers of the stomach became paralysed about this time, or its irritability so much diminished, as to resist the effects of the opium, and to render it, as well as, perhaps, the whole system insensible to the stimuli, which were afterwards used.

The little patient suffered extremely after the spasms commenced, and he complained of a very oppressive sense of heat in his chest and belly; especially about the scrobiculus cordis. The discharge of urine noticed, and the strength of voice which continued till within a short time of his death, are circumstances of very rare occurrence in this disorder.

Dissection throws but little light upon the nature and proximate cause of the disease. The great, and unusual quantity of mucus found in the inner surface of the stomach, and duodenum, (and perhaps of the whole intestinal canal) would tend to show, that a considerable degree of irritation had existed in those parts; and it must be acknowledged, that there is a striking similarity, in many instances, between the symptoms of the Spasmodic Cholera, and those produced by certain acrid mineral poisons. As also it may be observed in the state of the venous system after death.

In the present instance, the venæ cavæ, and subclavian veins were quite turgid, as if strongly injected, but there did not appear to be any great congestion in the lungs.

I am inclined to look upon the retarded action and stagnation of the venous blood, as the consequence in a great degree, of the depressed, and exhausted state of the vital powers, induced by some peculiar irritation acting generally on the nervous system.

Free bleeding which has been found so successful in the early stage of the complaint, operates, I apprehend, nearly on the same principle, as opium or any other narcotic, given in doses to produce a full sedative effect.

Venesection in the more advanced stages must be more precarious, and uncertain; but, if it is to be practised, perhaps opening the jugular veins might be attended with more benefit, than the abstraction of blood from any other vessel. On the treatment however of the epidemic, its nature and causes, my sentiments have already been very fully given to the Medical Board; more particularly in the paper which I had the honor to submit to them, dated 31st March 1819. I do not at present, therefore, consider it necessary to add any thing further to these remarks.

Mr. Asst. Surgeon Searle, Chicacole, 1st Jan. 1821.

Sheik Ismaul, Sepoy D. Company 3d Extra Battalion, Ætat. 30, in general of healthy appearance, brought into Hospital at 5 o'clock, on the morning of the 15th December. It appears he was attacked at 9 o'clock last night with watery purging, which continued at short intervals till 3 this morning, when the purging spontaneously ceased; he had also vomited four times during the same period, which had likewise discontinued; his skin is now cold (but not moist), and so is the interior of his mouth, and breath cold; no pulsation is to be felt below the humerus, and the brachial artery imparts but a fluttering sensation to the finger; his eyes are glassy, pupils rather dilated, but sensible to the stimulus of light; voice hollow, and the patient is perfectly sensible; his face continues its rotundity of features, he complains of internal heat, and thirst; has now no pain, but his attendant states he had before his admission into Hospital. I immediately subjected him to the spirituous vapor bath, and opened a vein in each arm, the blood however would not flow nor would it from either of the jugulars, both of which I opened; so that from the four vessels after a laborious attempt of an hour, not more than six ounces of blood was procured, and during this time as vitality appeared so nearly extinct, I could not resist attempting to excite arterial action by giving him a little warm spirit and water, but to no purpose; at noon he died.

Sectio Cadaveris—On examination I found a circumscribed inflammatory flush on the inner coat of the stomach, near its pyloric extremity; a considerable quantity of coagulable lymph was also diffused over the villous coat, and contained within the stomach; the small intestines were thickened throughout, and highly inflamed, in short livid, and so was a portion of the colon; the liver, spleen and kidnies were healthy, the gall bladder contained a good portion (of not unhealthy looking) bile, the urinary bladder was empty, and contracted to its smallest dimension; there was also general venous congestion.

Pulliah, Sepoy Lt. Company 3d Extra Battalion, Ætat. 23, of weakly appearance, was admitted into Hospital on the 14th December, complaining of having had three or four watery stools in the night with griping, skin cold, pulse weak, tongue white; at this time I was struck with his appearance, which pourtrayed something of the hippocratic countenance, but as no case of the epidemic had occurred for some time, I was disposed to conceive it a simple case of diarrhæa from torpor of the exhalents of the skin, I therefore ordered him a pill consisting of Pulv. Ipecac. and Calomel aa. gr. iss. with gr. is. of Opium to be taken four times in the 24 hours; in the evening his skin was warmer, pulse fuller, and he expressed that he felt better. On the following morning the 13th, whilst I was at the Hospital at about 9 o'clock, he was attacked with vomiting; he then brought from his stomach a round worm with some bilious fluid, which I attributed to the combined effect of the Calomel and Ipecacuana; as his pulse was however very low and he appeared very weak, I gave him immediately thirty drops of Laudanum with as much Spt. Ammon. Aromat. and a little water; as this was also presently after rejected, and his eyes appeared glassy and sunken, with a hollow sound of voice, and his pulse small and intermitting, I availed myself of the experience of Mr. Desormeaux, who was at this time with me in the hospital, and we determined immediately to draw blood, but although I opened a vein in each arm, immersed his hands into warm water, and at the same time applied warm clothes on the region of the heart, and hot stones to the extremities, it was with the greatest difficulty I could get 16 ounces; which was black, syrupy and cold, a scruple of calomel was at the same time given to him with two grains of opium, rubbed down with a few drops of water to the consistence of syrup; he was now wrapt up in warm cumblies, a blister of turpentine oil and cantharides powder applied to the epigastrium—At 5 P. M. I found that a short time before, he had two slightly feculent watery stools, and had once vomited; he was very restless; expressed that he felt no pain or heat internally, but was thirsty, his skin was cold (but not moist), interior of the mouth cold and clammy; the Calomel and Opium, as before was now repeated, and as the pulse was not to be felt at the wrist, I could not forbear giving him some warm congee with an eighth part of brandy and sugar in quantities of a spoonful at short intervals, and warm cumblies were constantly applied—At 9 P. M. I found he had once vomited, and had one evacuation as before since my former visit, and in other respects he appeared as I then left him; the congee and hot cumblies were continued—At about midnight without any sensible change preceding, he expired.

MR. ASST.
SURGEON
SEARLE,
CHICACOLE,
1ST JAN.
1821.

Paupidh, Sepoy Lt. Company Æt. 20, of strong make, was admitted into hospital at noon, on the 15th December; states that he had three or four watery stools in the night, had vomited once before this morning, and now again since being in hospital—Pulse weak and small, skin cold, has no pain, has thirst but not very urgent, countenance distressed, eyes glassy, interior of his mouth clammy and coldish, passed no urine since last night; I immediately opened a vein in each arm, from whence I took about 16 ounces of blood, which was black, syrupy and several degrees below the healthy temperature; as it flowed very slowly and the temporal artery appeared prominent, I opened this vessel also, from which I took an additional quantity of about four ounces (the blood here flowed not with the usual arterial jet, but languidly along the skin,) the appearance of it was not of the healthy scarlet, but of crimson hue (more the colour of healthy venous, than arterial blood).—I then gave him a scruple of Calomel with a grain of Opium rubbed down with a few drops of water; he was now comfortably put to bed, and warm cumblies frequently applied—At 5 P. M. no pulsation was to be felt at the wrist, in other respects he appeared the same; he had not however had any return of the vomiting or purging; I now gave him as he expressed great desire for something to drink, some warm congee with an eighth part of brandy and sugar, in quantities of a spoonful at intervals.—At 9 P. M. the skin and interior of his mouth were cold, pulsation of the brachial artery very feeble, eyes sunken, countenance hippocratic, and altogether he appeared in a very hopeless state; he was not however restless, nor had vomiting or purging recurred; the Calomel and Opium were now repeated and warm cumblies ordered to be constantly applied, and the congee as before during the night.—On the morning of the 16th I found that he had vomited once during the early part of the night, and although there was no very marked amendment, I thought him upon the whole better. I now ordered him ℥ij. Ol. Ricini. every hour, but as the first dose was rejected, Extr. Colocynth ʒss. with 10grains of Calomel were made into ten pills, two of which were given to him every hour, and he was placed on the vapor bath cot under which some burning embers were placed. The whole of the pills were taken, but produced no effect on the bowels till about 5 P. M. when he had two small purulent looking evacuations; he took likewise during the day Sago with spirit instead of congee. In the evening his skin was sensibly warmer, and pulse much improved (in the morning we could feel a little fluttering at the wrist), the Sago was continued thro' the night.—On the morning of the 17th I found he had had four evacuations the same in appearance as before; he had also passed urine during the night, after an interval of at least 40 hours; he was now in every respect much improved and felt a desire for food. I now gave him an ounce of the Sulphate of Magnesia in divided doses, which occasioned three feculent stools; since this he has been progressively gaining strength, and remains in hospital in a state of convalescence.

Remarks—Respecting the weather at this time, on the morning of the 15th, a sensible change was apparent since the night of the 5th, when much rain fell from the Northward (we had no rain for some weeks before); the thermometer, which had with little variation ranged between 64d. at 6 A. M. and 74d. extreme heat in the day, ranged now between 68 and 76d.—This thermometrical change was however attributable to the light and variable winds or rather lull, which now existed; stiff breezes had pretty regularly blown since the 5th off the land from West by North during the night, veering round by the North to East before noon, and far round to the Southward in the after-part of the day, and then returning by North again, to West after midnight.

Although the state of the weather as to temperature and direction of the wind, leads us to no conclusion as to the remote cause of the epidemic, that a sensible change took place is apparent, which leads to me to an inference, that a peculiar electrical change may be the morbific state of the atmosphere.

The immediate one I am decidedly of opinion, is the want of the due decarburation of the blood, and the accompanied absorption of Oxygen in the lungs; an inference I am certainly justified in drawing from the appearance of the blood; in all three of the cases, it was black, syrupy and cold, and the arterial blood from the one patient examined, is further corroborative of this opinion.

It is to be lamented that our knowledge of electricity is still so very imperfect, indeed confined to an acquaintance with its being either in the state of plus or minus in bodies; our ideas therefore of the atmospherical vicissitudes, relating to its electrical state, must necessarily be limited to one or the other of these, either of negation or excitation; the former we shall more naturally suppose to be the case in the epidemic, but it may be as probably the reverse, as by the latter the position may be as well maintained, supposing thereby the atoms of Oxygen to be to greater distances repelled from each other, or the affinities between the integral parts of the Oxygen and Nitrogen of the atmosphere altered, or otherwise modified as to its relations to, or capacities for caloric; indeed atmospherical vicissitudes may take place beyond our research ad infinitum—the feelings of us all, how sensible at times to its influence.—By this reasoning I mean to hold out the probability of a peculiar electrical change being the morbific state of the atmosphere; and how important an agent electricity must of necessity be, not only to the functions of the respiratory animal, but to the whole Phenomena of the Universe—that it is so, may be illustrated by two facts, which I shall mention, familiar to every person, the latter particularly bearing on the subject, and strictly analogical—a thunder storm addling eggs—that an electrical change takes place in a storm is even indicated by

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our electrometers—it also arresting the process of fermentation; Beer under circumstances of an exposed or bad cellar, at certain seasons of the year (predisposing causes) in which the fermentative process was going on, a progressive and proper manner for the formation of the spirit, and perfection of the Beer, is suddenly stopt, and the whole of it spoilt, and this will happen from a thunder storm of not an hour's duration; now in the process of fermentation a chemical operation is going on, corresponding almost exactly with one in the living system, and particularly favorable to my hypothesis. In the former, the Oxygen of the atmosphere, combines with Carbon, a component part of the saccharine matter in the wŏrt, and escapes in the form of Carbonic Gas (which occasions the suffocation, that sometimes ensues, on persons descending into cellars); in the latter oxygen is absorbed by the blood from the atmosphere in inspiration, and Carbonic Gas is elicited from the lungs on expiration; is it not therefore possible, that an electrical change may take place in the atmosphere, the effect of which upon the living system, predisposed to its operation, may be analogous to what takes place in the Beer under circumstances so little dissimilar?

The remote cause of the epidemic therefore I assume to be, a peculiar electrical state of atmosphere, the effect of which upon the predisposed (the predisposing causes being, exposure, fatigue, exhaustion, or in short debility, direct, or indirect, with constitutional aptitude) is defective oxidation, and decarburation of the blood; this then is the immediate cause, (and I think explanatory), of all the symptoms of the disease—First the blood being thus deteriorated in quality, it is fair to conclude that the secretions, which are all formed from it, must be deranged, and some altogether checked; this may account for the watery purging (or in some few cases vomiting) which in the majority of cases, has been the first most obvious symptoms; as carbon, which is now too abundant in the blood, may be the prime elementary principle of the secretions of the intestines, or as there can be but little doubt, the intestines are recipients for the excrementitious particles of the system, a surcharge of carbon in the blood, may be well considered in that light; this will again explain why inflammation of these organs has so generally existed, which would of course correspond with the quantity of increased action of their vessels, or from the acrimonious state of the excretions; the very same reasoning which accounts for the increased action in these parts, will explain the loss of it in the other secretory organs; first, the due want of oxygen, caloric and the nervous fluid would be deficient; the latter I take the liberty of calling the electric fluid;* hence the coldness and diminished vitality of the body; and thus are the strongest marked symptoms of the disease accounted for; the remaining less, tho' important secretions, bile, urine, saliva, and tears being checked, may be well attributed to these causes combined; a deteriorated state of the blood, with the want of their due and healthy stimuli, caloric and electricity, or heat and arterial action.

Cold sweat, which has so frequently been a symptom, I think more particularly pointing out the stomach being the seat of inflammation, from the known sympathetic connection existing between this organ and the skin; it appears to me rather an exhalation from the pores, than a secretion; spasm has also been not an unfrequent attendant on the disease, which I can explain in two ways; first, as the nervous or electrical fluid, is now only generated in the bowels (as in them alone arterial action I may say is going on), as the action here exceeds what becomes a healthy state, the excess of the electric or nervous fluid generated, for want of the due temperature of the body to its equal diffusion, induces sudden and violent contraction of the muscles, which are spasms; and thus again increased action, explains the internal heat so generally complained of; otherwise, as the brain, the depository of the system, contains a portion of electricity in store, to keep up the vitality of the body, it affords a supply to the system; but which instead, as in the other case, of being uniformly diffused, passes off in this way--A quære may be proposed—if this is spasm what is tetanus; tetanus I would say, also is spasm, but from a cause just the converse of the latter explanation; in tenanus, the electric fluid is generated, but the brain has lost its capacity for retention, or nerves their power of conducting it; it therefore as generated, excites the muscles, some into constant and irregular action, others into firm contraction, as we find in the different varieties of tetanic affection.

This view of the disease accounts for our treatment being in general so unsuccessful.

Although a removal of the remote cause is beyond our reach, the predisposing causes are not always so, which is necessary to the operation of the former; and this I think will explain why stimuli, as brandy, opium, &c. has succeeded with some; the effect of the remote cause however, the non-decarburation of the blood, &c. might, if we had apparatus at hand for its production, perhaps be obviated by the inhalation of some gallons of oxygen gas. The application of heat † and electricity, or galvanism, is next indicated, and as life would be destroyed, by the extreme excitement going on in the stomach or intestines, bleeding forms a necessary part of the plan of treatment; it also fulfils another indication, the impulse of the heart being so much diminished, by the disease, it cannot keep so large a body as the full quantity of

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* This is the opinion of several of the most eminent physiologists of the day, from the known property electricity has of inducing muscular contraction, and illustrating many of the phenomena of life; its production in the system has not however been satisfactorily explained, but which I will now endeavour to do; it is known in the several operations of chemistry, that the decomposition of, or formation of a new compound, is attended with a variation in the electrical capacities of the products; now the blood in the arteries, previously having absorbed oxygen from the air in its passage thro' the lungs, is of a florid scarlet colour till it arrives in the veins, wherein it is of a deep crimson hue; at the termination therefore of the arteries, whether in secretory organs, or other parts, a chemical change has taken place, caloric which till now was latent and united in the oxidated particles of the blood, is elicited in the state of sensible heat, and imparted to the system (thus the body's temperature), and at the same time the electric fluid, which I conceive to be in quantity, more than sufficient for the immediate vitality of the body, the surplus being conveyed by the most perfect conductors of electricity the nerves, to the brain its depository, from whence it is willed by the soul to the muscles, through the intervention of their nerves in the several actions of the body, or excites the sensorium to the various operations of the mind—A quære may be proposed, How is it the brain can be the depository of so unconfinable an agent as electricity—In reply—the brain has been demonstrated to consist of nervous fibres, imbedded in a peculiar cetaceous substance, the cetaceous substance a secretion from the vessels of the cerebrum, and cerebellum, may have a great and unusual capacity for electricity, that may well adapt it for this purpose; and again further well defended, or if I may be allowed the expression, insulated from without, by the non-conducting substance the hair,—thus the use of the hair, and manifestation that Providence has made nothing in vain.

† The spirituous vapor bath that I had the honor to communicate to the Board, through Mr. Superintending Surgeon Dalton, is a convenient and expeditious means of imparting heat.

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blood in circulation ; the latter therefore will react upon the heart, and decrease its impetus still further— whereas if a quantity of blood is detracted, the impulse of the heart will increase, as the resistance is decreased, and vice versa ; consequently bleeding will add strength to the system, as it adds energy to the heart—calomel becomes also an useful auxiliary, not only with the view of re-exciting the healthy secretions, but it is a fact I believe now pretty generally known, that it powerfully alters the action of inflamed arteries, which accounts for its utility in hepatitis and inflammation of the large intestines beyond its operation as a cholagogue.

Opium from its known qualities, must at least be considered in the light of a very ambiguous remedy ; indeed I am of opinion it must be injurious, and its administration in the large doses so generally recommended upon any grounds, by no means warranted, as the effect of opium, I conceive to be in many respects analogous to spirit, and which was the opinion also of the celebrated Dr. Brown ; when employed as a stimulus, small and repeated doses gradually increased, excite the system ; but which, eventually as is the effect of all stimuli, terminates in exhaustion, equivalent to the previous excitement ; the effect of a large dose, is sudden excitement, with immediate exhaustion ; with this view of its operation, the 100 drop doses of Laudanum can be seldom called for ; arresting the irritability of the stomach and bowels, and allaying spasms, by these large doses of opium, I am of opinion therefore is doing much mischief, to say the least of it, as it appears to me allaying these symptoms by the exhaustion of life.

Warm emolient clysters would appear to be particularly indicated, and blisters over the seat of pain, warm demulcent fluids are by no means objectionable, but rather called for to allay thirst, and should there be no internal heat or pain, and after the discontinuance of vomiting, a small quantity of spirit may be added perhaps with advantage ; castor oil or other laxative is I conceive of secondary consideration, after the more important symptoms are gone by.

My hypothesis may be, as I dare say it is, in many respects fallacious ; but as few attempts have been made to explain the cause, or phenomena of the disease, it will I trust plead my apologies with the Board, for offering this to their notice.

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Dr. Filson, Chicacole, March 1821.

Basdoo, Sepoy C. Company of the 3d Extra Battalion, Ætat 25, 27th February 1821.—Brought into hospital at 7 A. M. complaining of having had 6 or 7 watery stools since 4 o'clock, and vomited twice a quantity of watery fluid with all the rice he had eaten the preceding night ; excruciating spasms in his upper and lower extremities. I saw him shortly after he entered ; his legs and arms are quite cold, with dry skin, pulse not perceptible at the wrist, eyes sunk in the orbits, with a glassy appearance ; thirst most urgent, tongue white and dry, breath warm ; he feels a twisting in his bowels before going to stool, and then only, feels pain ; headach, great prostration of strength.—With a view of meeting the wishes of the Medical Board, I have determined to give the magnesia and milk a fair, impartial, and candid trial. Having no theory of my own to support on this most important subject, or influenced either in favor of one mode of practice or another, from having before seen only 2 cases of the disease, I am the more likely to give this remedy of which, so much has been said, that kind of trial, which will either tend to confirm the almost miraculous virtues ascribed to it, or throw it into that obscurity from whence it has so lately emerged. It is true, I have no faith in it at present, nor from the following quotation does it seem to deserve much. "A large dose of magnesia, if the stomach contains no acid to dissolve it, neither purges, nor produces any sensible effect," Edinburgh Dispensatory 1819 page 390.—Let him have ʒss. of magnesia in ℥j. of new milk immediately, and to be repeated every half hour.—Ten minutes after he took the medicine, he rejected it ; he has been at the bed pan once since, and passed but a very little limpid water, with very small flakes resembling curdled milk. Half an hour after the first dose the magnesia and milk was repeated. Bags of warm sand were applied to the lower extremeties (especially to the part affected by the spasms which he pointed out to the people) from his admission.—9 A. M. The second dose remained on his stomach. Complains of the spasms being much increased on moving about or sitting up to take his medicine. Rept. Magnesia.—10 A. M. Says he is very hungry, and keeps calling out for water to drink, the spasms in his legs and arms have become more severe. Rept. Magnesia.—Half past 10 A, M. He has had no vomiting or purging since 8 o'clock, the spasms remain unabated, skin still dry. Rept. Magnesia.—Half past 11 A. M He has been at the pan and passed about 8 ounces of the same kind of watery fluid as before ; no vomiting. The palms of his hands feel warm with moisture on them, and his pulse is now to be felt, tho' very small. Rept. Magnesia.—¼ to 1. P. M There is a natural warmth over every part of his body ; he has been at the pan, and what he has now passed is of a much darker colour, and contains more of the mucus flakes ; he voided no urine this time, but did every time before a little ; still complains of urgent thirst ; three cumblies to be kept over him : his face is losing the caduverous hue and sunken state ; He is evidently better.—1 P. M. Rept. Magnesia.—Half past 3 P. M. There is an increased heat over all parts of his body and his pulse is now more distinct, and the spasms not so violent ; no stools nor vomiting ; complains of pain in his throat. Rept. Magnesia.—6 P. M. He has been at the pan once since last visit, he passed a quantity of fluid of a yellow appearance, but quite watery and containing more of the flakes or has more the resemblance of the stool of a man with diarrhœa, skin natural, pulse 76 but still very small. He has again been at the pan, what he passed is exactly like that just described, spasms have left him, he has passed no urine, since half past 11 A. M. Complains still of urgent thirst. Rept. Magnesia, and let him have 4 oz. of thick congee—8 P M. He took about 3 ounces of congee at ½ past 6. He vomited a large quantity, apparently congee, milk, and Magnesia.—At ½ past 7 P. M. the milk seemed to have undergone no change, he has been at the pan twice and passed a quantity of the same coloured fluid as before—Pulse distinct and 76, skin natural, no urine, no pain of his head, nor spasms, thirst less urgent, complains of a grumbling feeling in his bowels, but without pain. It would appear, that he has thrown up all the Magnesia and milk he has taken since morning, from the quantity rejected ; feels his strength returning. Rept. Magnesia.—10 P M. Has been twice at the pan and passed the same kind of fluid, no urine, skin natural, pulse 76 and feeble, no spasms, Dr. Filson, Chicacole, March 1821.

the pain in his throat is much the same as last report, the thirst not so urgent. Rept. Magnesia.—12 P. M. He has been at the pan once and passed the same kind of fluid, but scanty in quantity, pulse 76 and distinct, skin natural, no urine, no pain in the head nor spasms, thirst not so urgent, still feels slight grumbling in his bowels before he goes to stool, not otherwise; no vomiting; the pain in his throat is as before, and complains of restlessness, and says he is very hungry; has been again at the pan, and the stool is of the same kind as before, and scanty in quantity. Rept. Magnesia.—28th February 2 A. M. He has been at the pan thrice, he passed thin watery and high coloured stools, pulse 76, skin natural, no urine, no pain or spasms; thirst not so urgent, still feels slight grumbling in his bowels before he goes to stool. The pain in his throat is much the same. Rept. Magnesia.—4 A. M. He has been at the pan thrice and passed the same kind of stools, pulse 76 and distinct, skin a little cool, no urine, no pain in the head, or spasms, thirst not so urgent; no grumbling, but now he complains of having a slight pain in his bowels before he goes to stool, which pain increases on pressure; no vomiting, the pain in the throat is much the same as before and complains of restlessness and much debility, says also he is very hungry. Rept. Magnesia.—6 A. M. He has been at the pan once, and passed a little high coloured thin watery stool; pulse 76 and oppressed; skin natural, no urine, no pain in the head nor in his bowels, no spasms; thirst not so urgent, no vomiting, the pain in his throat is not relieved as yet, he had no rest all night, and says he is very hungry and weak, with deafness. Rept. Magnesia.—½ past 6 A. M. Vomited about 8 ounces of the milk and Magnesia quite thick, of the consistence of sougee.—7 A. M. Still complains of deafness, he has been at the pan and passed 3 ounces of clear watery fluid with the same kind of flakes, calls for something to eat; let him have 4 ounces of milk and the Magnesia only every hour.—½ past 9 A. M. He took the milk which he has retained, he has been at the pan again and passed the same kind of fluid as the last, complains of thirst being more urgent, and of dryness of his throat; still calls out that he is hungry, the deafness better, but complains of giddiness, as yet he has passed no urine; he had another dose of Magnesia and milk at 9 o'clock; let him have 3 ounces of warm milk immediately; says the milk always makes him more thirsty. Rept. Mag.—10 A. M. He has passed another stool of the same kind as before, but containing more of the flocculi; let him have 2 ounces of Arrow root made up with milk.—½ past 10 A. M. He has been at the pan and passed about 2 ounces of a chalky substance of the consistence of soft boiled rice, on adding diluted nitrous acid it effervesced, hence shewing that the Magnesia has passed through his bowels but little if it all changed, further than discoloured; no urine. Rept. Magnesia.—11 A. M. He has been at the pan twice, but passed a very small quantity, apparently Magnesia, with a little water; skin hot, pulse full and 95, complains much of the heat over all his body, the deafness has nearly left him; no pain or giddiness in his head, neither spasms nor pain any where, complains of difficulty of swallowing; he took at ½ past 11, 2 ounces of thin arrow root and milk, and again at ½ past 12, 3 ounces more; at 12 o'clock he took the Magnesia and milk, says he does not like the milk either by itself or mixed with the arrow root. Rept. Magnesia, and let him have 4 ounces of thin arrow root made with water.—3 P. M. He has retained the arrow root, has been twice at the pan and passed a very small quantity, not more than 2 ounces each time, which effervesces when acid is poured on it, still complains of the heat of his body, pulse 96 and full, tongue moist; he now swallows without any difficulty and very little pain. Rept. Magnesia, and let him have 2 ounces of thin arrow root.—½ past 5 P. M. He has not yet got the arrow root, but has taken regularly the Magnesia and milk every hour; he threw up about an ounce of the medicine shortly after taking the last dose, wholly unchanged in colour; has been twice at the pan but passed very little; he has taken two ounces of the arrow root, and wishes for a little congee which has been directed to be made for him; no urine, skin natural, pulse 95, Habt. Hydrarg. submuriat. gr. x statim omitt mag.—½ past 6 P. M. He took the Calomel and 2 ounces of thin congee; he has been at the pan and passed about ½ ounce of something approaching to natural coloured fæces without any smell, and does not effervesce on the addition of acid; still complains of heat, tho' his skin preserves a natural temperature, but dry; has passed no urine since yesterday at 11 A. M., nor is there the least fulness in the hypogastric region. He has been now at the pan and passed about 2 ounces of the same kind of stool with a great deal of flatulency; pulse 96; let him take two ounces of milk immediately.—½ past 8 P. M. He has passed 3 stools of a natural consistence with the admixture of a greyish matter, and rather a disagreeable smell. He was a good deal griped before the first one, but has been much relieved, altho' he still complains of it. The stools do not now effervesce when the acid is poured on them, he has not vomited any since 5 o'clock, complains of dryness of his mouth and tongue, but not so much of thirst, still complains of hunger; no urine, skin natural; let him have a little congee every hour.—12 P. M. He has passed 6 stools the same kind as those he had 4 hours ago, still complains of much griping before he goes to stool, and the stools do not effervesce when the acid is poured on them; he vomited about 6 ounces of curlded milk mixt with water at 9 o'clock, when taking a small quantity of rolong congee; still complains of dryness of his mouth, and tongue, but not so much of thirst and he does not complain of hunger; no urine passed; skin a little cool, pulse oppressed and 90 He gets a little rest, but is much disturbed by the griping. Continued to give him a little congee every hour.—1st March 4 A. M. No stool since 12 o'clock but still complains of griping, no vomiting, but complains of dryness of his mouth and tongue and of hunger, no urine, skin cool, pulse oppressed; complains of weakness, says he feels a kind of sweet taste in his mouth, therefore does not like to take congee, but wants rice; continue his congee.—6 A. M. Has passed no stool since 12, he has slept a little during the night, griping abated, swallows without any difficulty, skin warm, pulse 96. No thirst, still complains of hunger; he has taken neither milk nor Magnesia since 7 last night, continue to give some congee.—9 A. M. He only complains of debility; he has had no evacuation of any kind since last report; he has taken some rolong congee, as much as satisfied his hunger, skin natural, pulse 85, and weak; let him have ½ ounce of Sulph. Magnes. immediately; whilst I was writing the report, he voided about ℥iss of high coloured urine which scalded him.—2 P. M. He has had 4 stools, the first firm but whitish, the 2d like milk and water a little curdled, 3d and 4th greenish coloured of an oily appearance and thick consistence, with an offensive smell, do not effervesce when acid is added; he has voided about 1 ounce of urine; he has taken about 6 or

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7 ounces of rolong congee, pulse 85, skin moist, complains of pain in his legs, has no pain elsewhere; let him have congee, and some rice if he wishes for it.—½ past 5 P. M. He has passed one copious stool greenish coloured, and thick consistence, strong smell with some flakes in it; he has made urine 3 times, small in quantity and very high colored. He took only some congee since last report; says his hands and feet smart him, pulse 85, and full, skin natural, let him have plenty of congee. He is now at the pan and passed the same kind of stool as before.—8 P. M. He has fallen asleep; he had two greenish colored stools and voided a little high coloured urine; he took some rice and thick congee; should it be necessary let him have an opiate with 40 drops of laudanum; he has awoke and called for the pan, no alteration in the stool from that last passed; he has made about 3 ounces of urine; his pulse is quite regular; skin natural and says he is free from pains; he has been offered some congee or rice but declines it; let him have the draught.—2d March 6 A. M. No complaint but weakness, had 3 stools the same kind as he had last evening before 12 P. M. since when he has slept well and feels greatly refreshed.—9 A. M. His only complaint is debility, with a little deafness. He has had no stool since one A. M. pulse 76, skin natural, he has taken some pepperwater and rice; R. Hydrarg Submuriat. gr. x. ft. pil. ij. statim sumend.—6 P. M. No stool since last report, pulse natural, skin cool, passed some ounces of urine, hab. magnes. sulph. ℥i. in aquæ font: ℥ii. statim ℞ Magnes sulph. ℥i. solve in aquæ bullient. lbj. adde Ol. Recini. ℥i. ♏ ft. enema statim injeciat.—3d March 8 A. M. He had five stools during the night like coffee grounds, with a very offensive smell, voided urine every time he went to stool, says he has no complaint, but is very hungry; pulse natural, skin cool, tongue clean, no thirst. Sumat. statim. hydrarg. submuriat. gr. x in pilul ij—½ past 4 P. M. He has had two scanty stools like those last described, he voided urine to-day several times, copious in quantity and of a natural colour; he has taken pepperwater and rice two or three times during the day; only complains of debility, pulse 82 and full, skin cool, tongue clean and moist, no thirst.—4th March 9 A. M. He had one stool during the night and one at 4 o'clock attended with a great deal of straining and griping; he passed two large round worms, about one foot each in length; this last stool has a better appearance than any passed since he came into Hospital, urine copious, skin cool, pulse 70, appetite good, no thirst, slept well last night, his gums a little tender. Habt. sulph. magnes oz. i. in aquæ font. oz. iv. statim.—5th March. He had six watery stools of a dark colour after the salts, he passed two more worms the same as those he passed in the morning; skin cool, pulse 70, appetite good, no thirst, slept well, gums a little tender with slight ptyalism, only complains of debility; I consider him now convalescent and requiring no medicine, but will allow him to remain a few days in Hospital with a view of watching after the state of his bowels, and allow him to gain strength.

How far I have been justified in the treatment, it is not for me to determine; I have been guided wholly by a desire to give the medicine a fair and impartial trial; it perhaps may be thought, that I delayed too long in giving the calomel, such was my own opinion, and not without much anxiety as to the result, I refrained so long; but on the other hand, was there a certainty that any interference of mine could have accelerated the cure?—the apparent advantages of magnesia and milk in overcoming such a combination of fatal symptoms, as the subject in question was seized with, would make one doubt. Besides an earlier interference would have rendered the experiment less conclusive, and the cure might be attributed to the supplementary means. It may be asked how far we may depend on magnesia and milk for the cure? or does it effect the cure? or is it the magnesia alone or the milk? or in fact is it doing little else than looking on at the effects of nature, and giving this remedy that we should not be supposed to be idle. As yet we know too little of the cause or positive indication of cure. Hence we have bleeding, stimulants including opium, with calomel, burnt cork and magnesia and milk—all of which have been said to effect cures. He took in all, twenty eight drachms and half of magnesia, a great part of which he rejected, and a part passed through his bowels, which from the experiment made with the nitrous acid it would seem without being chemically changed; hence we must conclude that it had not combined with any acid in the stomach.

It may be asked whether calomel is requisite to perfect the cure; and if so, at what period of time it should be given. It appears to me that as soon as the spasms and the vomiting have ceased, and other signs of amendment taken place, the calomel should be given to stimulate the different organs to perform their respective functions.

Case of Surg. Surg. C. Rogers, M. D. Northern Division, Drawn up by himself.

Taken ill 12th June 1822, at Masulipatam, Ætat. 47, constitution robust, 25 years residence in India.—June 12th, 2 P. M. Was suddenly seized at his Garden House in the Pettah, with oppressive nausea, followed by copious vomiting of a glairy, whitish fluid, among which was mixed some undigested food. Nearly at the same instant, brisk purging commenced, the first evacuation consisting entirely of bright yellow coloured bile, but the second and third, (after an interval of a few minutes,) assumed the appearance of turbid water, or congee, passing out of the bowels with great force, in jets, as if squirted from a syringe. Slight griping preceded each evacuation, but there was no tenesmus, nor any spasms felt, either in the muscles of the abdomen, or extremities. Considerable depression of strength was experienced; the respiration, which at first was deep and anxious, became freer, soon after the vomiting, and a general warm moisture pervaded the surface. The pulse beat irregularly, and slower than natural, and the subcutaneous veins collapsed. The face was pale, and the countenance dejected, resembling those of a person in typhus fever, but the mental powers were in no wise obscured. The feelings of the patient at once suggested that the present was an attack of the Epidemic Cholera, which was fully confirmed on the arrival of Mr. Assistant Surgeon Paterson, whose professional aid became immediately available, and who at this crisis concurred in the necessity of adopting the most vigorous and energetic practice to avert the imminent danger of this horrible disease.—The following prescriptions, were accordingly duly and successively administered—℞ Tinct. opii, spts. ammon. comp. aa. gtts. l, Spt. gallic. (brandy dicto) ℥i, ♏ ft. haustus statim sumendus et rept. pro re nata, mittr. sanguis e bracho magno orificio, add ℥ xxx, ul

Case of Supg Surg. C. Rogers, M. D. Northern Division, Drawn up by himself.

usque ad syncope, applicet empl. lyttæ epigastrio. The first antispasmodic draught was retained on the stomach for 10 minutes, or until the conclusion of the blood-letting, when a tendency to syncope coming on, violent vomiting and purging, but without any pain, recommenced simultaneously; the same watery fluid was discharged. The draughts were repeated a second, and third time, during the short intervals of vomiting, the purging having entirely ceased within the first half hour.—3 P. M. During the abstraction of the blood, the pulse gradually became quicker, fuller, and more regular, the skin warmer, but the thirst now began to be intense, and the whole mouth parched, and clammy; the tongue whitish; the blood flowed in a large, sluggish stream, of a dark colour, and without any halitus; it coagulated almost immediately, but did not exhibit a buffed coat.—4 P. M. There has been no return of the purging, whilst the vomiting is only renewed at longer intervals; the matter ejected from the stomach, consisted chiefly, if not entirely, of the liquids drank; the debility of the system did not appear to be increased by these efforts; on the contrary, the diffusion of heat, and moisture on the skin has become more general, and equable.—6 P. M. The reaction of the system became every hour more evident by the increasing quickness of the pulse, the turgescence of the veins, the flush on the face, palms of the hands, and soles of the feet; but above all, by the intense sensation of thirst, which is unquenchable; every attempt to allay it, by drinking the mildest fluids failed, and invariably renewed the vomiting. There was however neither pain, nor burning heat felt in the region of the stomach; nor any where else in the abdomen. Cool air was eagerly desired, and immersion of the hands and feet in cold water, and vinegar was peculiarly grateful—8 P. M. The blister has already begun to act as a rubifacient, and for the first time since the attack, about 2 ounces of urine of high colour, have been passed. The vomiting still recurs about once every hour, and is apparently excited, by the smallest quantity of liquid taken; or, by the large volume of air extricated in the stomach, occasioning as it were the mechanical stimulus of detention, an effect the more likely to happen from a spasmodic stricture on the pyloric orifice, which is suspected to exist—Fluids swallowed produce sound like water dropt into a bladder filled with air.—10 P. M. A considerable degree of restlessness prevails, imputable to the state of reaction, of which thirst continues the most urgent, and distressing symptom.—Mr. Surgeon Dean visited the patient at this period, and highly approved of all that had been done; but very judiciously recommended a total abstinence from every kind of drink, however painful, for a certain number of hours, and to substitute rinsing the mouth frequently with lime juice and water, as the most effectual means of subduing the vomiting, depending as it seemed, on excessive irritability of the stomach.—Midnight, retched only once within the last two hours, and flatus only was then discharged. The blister has excited considerable irritation, and vesications are rapidly forming; micturition; thirst, and restlessnes continue, but are not increased; pulse 100, and soft, skin warm, with partial moisture about the head and breast.—13th, 6 A. M. The blister has fully risen, and there has been no return of vomiting. Since midnight the flatus of the stomach has escaped in immense quantities by the bowels, affording proportionate relief. Mild liquids such as toast water, chicken broth, tea, can now be drank in moderation, and although the mouth is clammy, and the tongue quite covered with a viscid mucus, the thirst has sensibly abated. A few short intervals of sleep towards morning.—7 A. M. R. Hydrarg. Submur. gr. vj. Confect. Aromat. ℈j. M ft. Bolus Statim Sumendus.—11 A. M. Some nausea was experienced from the Calomel Bolus, but in the course of the forenoon, were produced 6 bilious tho' rather scanty evacuations, after which, the thirst gradually diminished, whilst liquids could be drank with greater freedom and *relish.*—3 P. M. The restlessnes experienced during the preceding night, and former part of this day has now greatly subsided; the pulse is reduced to 90, and the skin to nearly its natural temperature, and moisture. The salivary secretion is increased, but the taste is completely vitiated by a viscid mucus covering the tongue and fauces, and the thirst is still occasionally urgent.—7 P. M. Relished a cup of ginger, and green tea, mixed, which was followed by free perspiration, and pleasurable sensations over the whole body.—14th Passed a good night enjoying refreshing sleep, occasionally however, interrupted by disagreeable dreams.—9 A. M. Sat up half an hour in the chair, and breakfasted on a cup of tea, and a little toasted bread; pulse and skin natural, the thirst nearly gone, but the tongue remains whitish and furred in the centre.—2 P. M. A slight return of appetite; dined on a bason of spicy soup, which excited a warm and grateful sensation on the stomach, relieving flatulency, weak brandy and water effectually quenched the remaining thirst; and a sense of extreme debility only remains.—9 P. M. Capiat. Bolus. Calomel gr. ij.—15th. Passed another good night; the sleep as before being only occasionally interrupted by dreams, allied to incubus.—Soon after breakfast this morning the dose of calomel produced two bilious and feculent evacuations, nearly natural in their colour and without either griping or tenesmus—The tongue looks much cleaner, and the sense of taste slowly revives.—Took a bason of spiced soup at noon, and at 3 some sago jelly, with wine, both of which sat light on the stomach.—Sat up in a chair for 3 or 4 hours during the day, and derived amusement from reading, the mind being cheered with the hopes of a speedy recovery.—16th. Much refreshed from the sleep enjoyed last night, diversified as it was by singular dreams; breakfasted as usual on ginger tea and toast and at noon took 5 grains of rhubarb in a glass of madeira—at 3 P. M. feeling a little appetite dined on a wing of grilled chicken.—In the course of the evening the rhubarb operated mildly, and greatly relieved the flatulency of the bowels, a symptom hitherto so distressing.—17th Slept well during the night, the dreams being less vivid, and disagreeable, as the appetite and strength improves daily, and the complexion regains a healthy colour.—It is intended to adhere strictly to a light and nutricious diet, and by occasional small doses of rhubarb to restore the tone of the stomach, and to regulate the bowels until the wonted exercise can be resumed.

In the preceding brief history of his case, the patient has endeavoured to describe the symptoms as accurately, as he felt them acutely. The subjoined observations, as farther illustrative of the insidious nature of the Epidemic Cholera, may be considered in the light of inferences, from the premises, and it is hoped will be received by the Medical Board, in the same spirit of candour, in which they are offered.

Case of Supg Surg. C. Rogers, M. D. Northern Division, drawn up by himself.

1st. The sudden invasion of this disease, and the rapid transition from a state of robust health, to a train of morbid association, and commotion, threatening the immediate extinction of life, is peculiarly characteristic, and naturally suggests, that the "causa morbi," whether engendered in the atmosphere, or whether received into the system, by the lungs, the stomach, or the skin, is highly deleterious, and concentrated. The shock may in some measure be compared, to that of electricity, deranging more or less, every function of the human frame, yet apparently exerting its violence, chiefly on the chylopoetic viscera. It is proper to observe—that on the morning of the day of the attack, the patient had, with a view to obviate constipation, taken a small dose of ʒii of sulphate of magnesia, combined with a bitter and carminative, which had operated gently, in the course of the forenoon.—The patient, judging from his own feelings, is however disposed to view the constipation, as merely accidental, and not premonitory of the Epidemic; although it is possible, that the cathartic, might have accelerated, or in other words predisposed to the attack of the Epedimic, as hinted at in the Board's Circular of the 21st June 1821. It will be much more to the point, to state, that the weather at Masulipatam, was intensely hot, during the greater part of the month of May, in the latter end of which, the periodical land winds prevailed; and, that in the early part of June, there were sudden vicissitudes, and thunder storms, with abundance of rain. It often happened too, at this time, that whilst the days were sultry, the nights were remarkably cool. On the 4th of June the epidemic first appeared among the Europeans at Masulipatam, and still continues to prevail sporadically, owing in all probability, to the unavoidable, or incautious exposure to a moist and variable atmosphere.

2d. With regard to the question, whether the Epidemic Cholera is contagious, it deserves to be mentioned, that the patient a few days previous to his illness, had visited the European Hospital, in the Fort of Masulipatam where the Cholera was then prevailing, and had also attended a Native Servant, in his own compound, who died of the epidemic, the very day preceding his own attack; but no conclusion can be drawn, from a single fact, especially when opposed by others of an opposite nature. It is indeed to be regretted, that we cannot, in the province of medicine, as in the exact sciences, institute the "Experimentum Crucis," to establish axioms, or principles; and hence the great difficulty, of separating the causes of disease, and allotting to each, its due proportion of the effect: Men, as justly observed by Bacon, "deceive themselves, in consequence of this, continually, and think they are reasoning from fact "and experience, when in reality, they are only reasoning from a mixture of truth and falsehood. The "only end answered by facts, so incorrectly apprehended, is that of making error more incorrigible."

3d. There are strong reasons for believing, the Epidemic Cholera, to be a disease, "sui generis," allied to the species of congestive Typhus Fever, recently so ably described by Dr. Armstrong in his Essay on Fever, which may be regarded, as forming a new era in medicine. The analogy, is supported from an attentive consideration of the juvantia, and ledentia. In reference to the practice, in the case of the epidemic above recorded, it will be seen, that the remedies were few and energetic, and that their success, may (under Divine Providence) be ascribed, to their early application, especially the blood letting, which might be said, to have at once cut short the disease, aided by a constitution naturally sound. The same remedies used a few hours later, might have altogether failed. The patient cannot conclude these remarks, without once more, gratefully adverting, to the skill, and decision, and unremitting attention, evinced in his treatment, by Mr. Asst. Surgeon Paterson, in the early stage, and afterwards to the benefit derived from the friendly advice of Mr. Surgeon Dean.

Asst. Surg. J. Aitken, M. D. Madras, 1822.

Mr. G. a man of spare habit—Æt 54, was seized with Cholera on Saturday morning the 10th instant—He arose in perfect health about 8 o'clock; in the course of an hour after he got up, he had two or three motions of a bilious nature, mixed with some indigested food. At ten o'clock he sent to me for a common purge, thinking that, it would carry off any substance that might have disagreed with him, although he was not aware of having eaten any thing that could have done so. In the course of half an hour, I received another note saying, that he had had three or four more evacuations, consisting entirely of a congee-like fluid. I immediately went down to see him. On the first glimpse of his countenance I was glad to find, that it betrayed no anxiety, and was perfectly calm. His pulse was 88 and soft. Tongue clean, no pain in the bowels nor about the prœcordia. He had had no vomiting, and upon the whole I was induced to think that fancy had had a great deal to do in conjuring up the idea he entertained of his having Cholera. I was soon however undeceived; for, during the time I remained with him, about half an hour, he had two evacuations with the peculiar appearance, and smell of those voided in cases of that disease—He took 2 oz. of the antispasmodic mixture immediately, and the same quantity was left with him in case of rejection. An enema was also immediately ordered, with 1 dr. of Tinct. Opi. and 3℥ of Arrow root. I left him about 12 o'clock. At half past 1 o'clock, I found he had retained the draught, and had also kept the injection for a quarter of an hour. His pulse 90, no anxiety, no pain, nor uneasiness. Had had 3 stools, during my absence, of the same appearance as before. I gave him ℈i. of Calomel, and half an hour afterwards repeated the antispasmodic mixture. They were both vomited immediately. The Calomel and the draught were given 3 times, with the same success. Mr. White saw him at ½ past 4 o'clock—the pulse was then 90, soft and compressible; countenance natural; extremities of the natural temperature. To allay the irritability of the stomach, I applied the Nitric Acid Blister. The Acid was about S. G. 1.300 and was used undiluted; after which, 1½ grain of opium was given, which was retained. An injection as before was also given again; until this period, he had had no urgent thirst, and the only thing of which he complained, was occasional cramp in the lower extremities —9 o'clock P. M. Had no vomiting since he took the opium pill; had two or three evacuations about two hours after the last injection; p. 100; small; countenance natural; lower extremities warm; hands and arms covered with cold sweat; thirst. He was given 2 ounces of Castor Oil, which he retained. The injection was repeated.—12 o'clock P. M. The Castor

Asst. Surg. J. Aitkin, M. D. Madras, 1822.

Oil had not operated ; it was repeated and a purgative enama exhibited, which was retained. P. 106 small. No oppression, nor difficulty of breathing ; lies on both sides with ease ; thirst urgent ; countenance shews dejection ; voice natural—Had weak brandy and water occasionally ; hands and arms the same, were covered with flannel ; lower extremities natural temperature.—3 o'clock. The medicine has not operated ; no evacuations by the injection ; pulse has become gradually weaker and is now imperceptible at the wrist ; appears restless, and complains occasionally of cramp; answers questions distinctly ; breathing more hurried ; hands and arms cold and clammy ; lower extremities natural ; the injection was repeated and 12 grs. of Calomel and ℈i. Jalap given, which never operated. In this way he continued to sink gradually, and died at 6 o'clock on Sunday morning.—Mr. G. had been 30 years in India and was a weakly slender man ; and from the symptoms being all so mild, I cannot reproach myself with not having bled him. From all I have been able to collect regarding the disease, I think it is not improbable, that the stomach is the principal seat of it. At all events the secretions both of that organ, and of the intestines are greatly changed, so as to become the most striking feature, and I regret that with this view of the nature of the disease I did not immediately give a large dose of Calomel, as a likely means, along with the antispasmodic mixture, of changing the action of the stomach and intestines.

THE END.

APPENDIX:

CONTAINING

THE SICK RETURNS

OF THE

ARMY OF FORT ST. GEORGE,

FROM THE YEAR 1815 TO 1821 INCLUSIVE,

EXHIBITED IN A SERIES OF 15 TABLES;

ALSO,

DIURNAL TABLES

OF THE PROGRESS OF

CHOLERA,

IN 6 PARTS;

TABLES

OF THE

MOVEMENT OF TROOPS;

AND

METEOROLOGICAL TABLES

IN 7 PARTS,

FROM 1815 TO 1821.

REMARKS,

EXPLANATORY OF THE TABLES.

From the nature of the documents upon which the following tables have been constructed, it was found impracticable to render them so perfect as was to be desired. In explanation of this remark, and for the information, especially, of those who may be unacquainted with the modes of official medical returns under this Presidency, it seems necessary to premise, that each Medical Officer makes a monthly return of the sick under his immediate charge, to a Superintending, or Staff Surgeon, in whom is vested the control over the medical department of the district, or division of the Army in which he is serving; and, that the Superintending, or Staff Surgeon transmits to the office of the Medical Board, not only these original documents, but also two abstract returns compiled from them, one relating to the civil, and the other to the military department. It is to the latter only, that the tables in this work refer.

The original, or individual return exhibits the number of patients labouring under any given disease which remained in hospital at the commencement of the month, and of those admitted during it; and of this aggregate number, those who recovered, who died, and who were transferred in the course of the month, as well as those remaining at its termination. The general, or abstract returns however, for divisions of the army, by the Superintending, and Staff Surgeons, only exhibit the aggregate number of cases of each disease in hospital during the month, without the particular events abovementioned being referrible to the respective diseases. It would accordingly have been desirable to have compiled these tables from the original returns, as they afford the most satisfactory information; but their immense extent for so long a period, presented insuperable obstacles. Recourse was therefore had to the condensed returns of the Superintending and Staff Surgeons, submitting to the disadvantage of not being able to distinguish the proportional cures, deaths, and transfers of each particular disease.

Although each monthly return, taken by itself, and as given in the first ten tables, is correct as far as its plan extends, yet it is obvious, that if the returns of two or more months are added together, the including of " remainders" would lead to a fallacious result. The eleventh table, which is a mere abstract of the preceding ten, presents this fallacy in respect to the *diseases*; for it is made up by adding the twelve monthly returns of each year. The number of *diseases* therefore, exhibited in the tables, is far above the real number; and it has been ascertained to be to the true number in the proportion of about 28 to 17, during the four first years; and of 27 to 17, during the two last years —the actual number of any given disease may therefore be pretty accurately ascertained, by attending to these proportions. In respect however to the actual numbers of admissions, cures, deaths, and transfers, for the year, they are correctly given; and by omitting all the " remainders," excepting those on the first day of the year, the aggregate is likewise correct. For example, the aggregate *number of patients* in hospital during the year 1815, is 57,562 which number is pretty nearly accounted for in the respective columns of cured, dead, transferred, and remaining; but if the *diseases* for that year are added up, they will be found to amount to 95,198 or as about 28 to 17, as already explained. The general application of this rule gives the following results.

1815	Grand total of diseases	95.198×17÷28=57,798	Total actually in hospital	57,562
1816	" "	95,022×17÷28=57.692	" "	57,377
1817	" "	107,902×17÷28=65,512	" "	64,885
1818	" "	118.471×17÷28=71 964	" "	71,288
1819	" "	127,702×17÷27=80 404	" "	80 202
1820	" "	127,554×17÷27=80,311	" "	79,946

The return for 1821, introduced in the table is correct as it stands.

The difference between the hypothetical, and the actual numbers of diseases is thus shewn to be unimportant.

The general return for the year 1821 has been constructed from the original regimental returns of the Medical Officers, and it accordingly presents a view of the state of health of the Army during that period, exempt indeed from the imperfection which has just been stated to exist in the tables preceding it, but still, not critically accurate. The table of deaths, forming the XVth number, was drawn from the condensed returns of the Superintending and Staff Surgeons; and although these have been constructed on a greatly improved model, and drawn up with commendable care, some discrepancy will nevertheless be detected, on comparing the numbers exhibited in that table, with those in the general return immediately preceding it.

In comparing the sick returns of different divisions of the army with each other, it is necessary to be aware, that those of the Presidency have in some degree been vitiated by a custom which has until lately prevailed, of confounding the civil, with the military sick in the Garrison, or General Hospital of Madras; and likewise that many of the military sick in that Hospital, do in fact belong to absent Corps of H. M. and the Honorable Company's Service, and not to effective troops at the Presidency; against these two descriptions of sick there is no set off in effective strength; and, consequently, the salubrity of the climate of Madras might be called in question unjustly, on looking at its sick returns, unless this explanation had been given. The *diseases* of the Europeans in the Presidency returns, may, on this account, be correctly reduced by 200 each month. It may here indeed be proper generally to observe, that there are many sources of inaccuracy in such extensive returns against which it is difficult to guard; but the general results exhibited in the tables may nevertheless be safely taken as a sure basis for practical observation, and reasoning.

It remains to be explained, that under the head of "transferred" are included, patients discharged from hospital, who are not cured; some of these are sent from one station to another; some are discharged the service; some are thrown into field hospitals; and, of the Europeans, considerable numbers are sent from the interior to Madras, for ultimate embarkation for Europe. A great proportion therefore of the transfers, become new admissions in other hospitals. It is also to be remarked, that the deaths are generally attributed, in the returns, to the diseases under which the patients first entered hospital, although in point of fact, they may have happened from other complaints, contracted during their stay there. In some returns, the disease which actually proved fatal is stated in a note, and the tables have, as far as possible, been constructed with due regard to such information.

The diurnal tables of attacks of Cholera, and of the casualties from it, during part of 1818, the whole of 1819, and part of 1820, are taken from the registers of sick which are kept in all the hospitals under this Presidency. These registers are nominal lists of the patients admitted; and they exhibit in distinct columns, every event which happens to the patient during his stay in hospital. The registers of several native Corps during that period are however missing, so that the tables do not embrace every instance of Cholera. The phases of the Moon are given in these tables for the convenience of reference.

It has not been found possible to distinguish with any degree of accuracy, between the cases stated in the returns to be those of the Epidemic Cholera, and those which are usually termed Cholera Morbus; they are therefore in most instances blended together in the tables.

With regard to the tables of the movements of troops, they are confessedly not calculated to convey minute information. The aggregate number of troops in movement, in each division of the army, in the course of a quarter of the year, or three months, is shewn in general terms; but as the precise periods during which they remained under canvass, or were within the confines of the division are not given, it cannot be always ascertained that the sick returns of the division for these three months, actually included them. Neither will it be correct to take the aggregate number of troops shewn in the tables, as that really under movement; for a corps of, say 3,000 men, under march, may have traversed more than one division in the course of the quarter, and so be included in the statement for each; and the subsidiary forces, beyond the frontiers, although under circumstances little short of field exposure, were not at all times really under canvass. The information contained in these tables of the movements of troops, must therefore be considered as of but a general nature.

The meteorological tables, which have been furnished by the Honorable Company's Astronomer, will be found to contain, it is presumed, not only such information respecting the state of the weather as may be required by the Pathologist in his researches concerning the nature and causes of Cholera; but it is farther hoped, that they will convey to the learned in Europe, who make this branch of knowledge their study, the most complete account of the Meteorology of India that has hitherto been presented to them. It is true that these tables refer only to the climate of Madras; and it is to be regretted that the want of proper establishments at other places under this presidency, has prevented the acquisition of an accurate knowledge of the variations of their climate. But to the pathologist they are sufficient in the present case, since Cholera has actually existed at Madras, and its relations to the phenomena of the weather, whatever they may be, must be the same in all places.

As, however, the narrative of the progress of Cholera, through these territories, notices frequent occurrences of the disease during a state of weather, very opposite to that, which the tables shew to have then prevailed at Madras, it may be proper here to offer some explanation of the usual course of the seasons of this peninsula. The winds may be said to be periodical, and are known by the term, monsoons. The N. E. monsoon commences generally in October, and is attended with dry weather over all the peninsula, excepting that narrow stripe of coast, forming its eastern side, which is washed by the bay of Bengal, and commonly known as the "Coromandel Coast."—On this stripe then, the N. E. monsoon brings the periodical rains, which, commencing sooner, or later, in October, terminate sooner, or later, in December. From this last period, till toward the end of February, the N. E. wind, or monsoon, now a dry wind, continues to prevail, and the weather remains cool, and in many places, cold. The N. E. wind then ceases, and from this period till toward the end of May, the winds are irregular, and the heats are intense all over India. In the Bay of Bengal, and on either of its shores, the winds at this time are chiefly from the South, and are remarkable for their humidity, heat, and relaxing effects. About the middle or end of May, the S. W. Monsoon commences, and is attended with the periodical rains in all parts of the peninsula excepting the Coromandel Coast, which then suffers great heat and drought; these rains cease in August or September, when the climate becomes generally sultry, and variable, until the N. E. monsoon sets in again.

Thus there are two great, and most important distinctions of climate. The Coromandel Coast has its *rainy* along with its *cool* season; and its *hot* season may be said to be always *dry*. All the rest of India has the *rainy* season along with the *heats* of June, July, August, and September, when the Sun is to the northward of the Equator. These rains indeed, in some degree temper the excessive heat; but their intervals are often distinguished by an intense force of the solar rays, and by dead calms; and that whole period is subject to all the effects of heat and moisture combined, acting on the soil, and vegetation.

Referring then to the tables of diseases in their order, the Nagpore and Hydrabad States are subjected to the rains from the S. W. Monsoon. The Northern Division experiences the rains of the N. E. Monsoon, but this tract feels also the occasional influence of the S. W. rains. The Ceded Districts of which, Bellary is the capital, has the S. W. rains, and in some degree also, the N. E. The Mysore Division which includes the provinces of Malabar and Canara, gets the S. W. rains; the Centre and Presidency Divisions, have the N. E. rains; the Southern Division the same; but it is also within the range, in some parts, of the S. W. rains. The Travancore Force gets the S. W. rains, as did all the Field Forces whose returns are included in the Xth Table.

The preceding observations, however, can only be received as conveying a very general view of the climate of the Peninsula of India. The N. E. monsoon not unfrequently carries its rains far to the westward of the limits assigned; and in like manner the S. W. monsoon refreshes the eastern parts with occasional heavy showers. In some of the more elevated tracts, though the sun be vertical, the air is cold during the rains, especially where the wind blows fresh; but in lower situations, and where the soil is inundated, the air is often extremely hot, and oppressive, and is surcharged with moisture.

The following cursory remarks on the elevation, by barometrical observation, of the different provinces of the Peninsula, have been drawn from notes, obligingly furnished by Captain Cullen of the Madras Artillery, whose researches in that, and other departments of science, are well known, and highly appreciated. Without taking into account those habitable, but confined tracts, which are found in the Nhilgherry Hills at an elevation of 5, to 7,000 feet, and those on the Shervaroy, or Salem Hills, at an elevation of 4, to 5,000 feet, above the level of the sea, the table land of Mysore, presents the most elevated surface of the Peninsula. The highest part of this table land includes the stations of Bangalore, Nundidroog, Colar, and Oossoor, forming an area of about 60 miles by 50, and it presents a mean altitude of about 3,000 feet, above the level of the sea. There is a rapid fall, thence, on every side; and the mean height of this slope, or belt, surrounding the higher area, or plateau abovementioned, may be stated at about 2,400 feet. The valley of Seringapatam, including the town of Mysore, is also about the same height.

Trichinopoly, the capital of the Southern Division, is only about 250 feet above the sea; but the ground rises to the southward of this place attaining at one point, the height of 800 feet, so that if a line be drawn through the division, by Madura, and Palamcottah to Cape Comorin, it would give a mean altitude of between 4, and 500 feet. The country in this quarter has a gradual rise from the eastern shore, to the westward, where it is bounded by the great Travancore chain of mountains.

There is indeed a very remarkable ascent observable throughout almost the whole of the peninsula south of Berar, from the eastern shore to the great western ghauts, and one need only cast his eye on the map to perceive this, by the course of the rivers, which uniformly take an easterly direction, and fall into the bay of Bengal. The country, from Madras, by Arcot, towards the bottom of the Pedanaigdroog pass, rises gradually to the height of between 8 and 900 feet above the sea; and a similar slope may be considered to obtain for 60 or 70 miles southward of Madras, and for 130 or 140 miles north of it. The western coast is, however, comparatively bluff and precipitous; rising in abrupt undulations, and low hills, which are covered with jungles or forests, from the sea, to the great chain of western ghauts. The mean height of the provinces of Malabar and Canara may be estimated at about 200 feet above the level of the sea.

The Ceded Districts, which adjoin the Mysore territories on the north, partake of the general slope which has been noticed; Bellary, the capital, lying nearly in the centre of the province, is about 1,600 feet above the level of the sea; and the rise continues westward till it attains the elevation of about 2,500 feet. Belgaum in the Dooab, is situated at this height, which is nearly the highest part of that province.

The average altitude of the province of Hyderabad, including an area of nearly the same magnitude as the Mysore table land, is about 1900 feet above the level of the sea; the city of Hyderabad itself lies low, and is situated near the northern edge of this area. The slope to the East and North West from this elevated portion is rapid; that to the North is much more gradual; the space to the South, between it and the Ceded Districts, comprehending the bed of the great river Kistna is from 1100, to 1300 feet above the level of the sea.

The elevations of Bangalore, and Hyderabad thus interrupt the general slope of the Peninsula which has been already noticed. The country round Jaulna, is from 16 to 1800 feet above the level of the sea, and the general ascent from East to West is here very distinctly marked.—Poonah, situated near the Western Ghauts is believed to be 2500 feet, or nearly so, above the sea.

The flat open plains of Nagpore seem to indicate their approach to the alluvial districts of the Ganges; for, at the very base of the Peninsula, and at a distance of 400 miles from either the eastern or western sea, they attain only an elevation of 8, or 900 feet. Hinginghaut, situated 50 miles south of Nagpore, is only 700 feet above the level of the sea.

The Northern Division including Guntoor, is a series of level plains elevated no where more than 50 feet above the sea. The Ghauts approach the Coast near Vizagapatam, without causing any material alteration in the level of the intermediate vallies.

The stations along the eastern and western coasts are so immediately on the level of the sea, as to require no observation. The elevation of the principal inland stations may be given as follows.

Wallajahbad	300	Cuddapah	480
Arcot	558	Gooty	1260
Vellore	676	Bellary	1600
Nellore	80	Adonie	1400
		Kurnool	900
Salem	907	Belgaum	2500
Trichinopoly	250	Badamie	2100
Dindigul	700	Darwar	2423
Madura	600		
Palamcottah	209	Secunderabad	1850
		Jalnah	1650
Bangalore	3000	Poonah	2500
Seringapatam	2300	Nagpore	932
Mysore	2500	Chandah	600

The general appearance of the countries above, and below the ghauts, is considerably different. The former are distinguished by a dry soil, intersected by streams of running water, having but few tanks, and the general cultivation being that of dry grain; the latter are more open, and flat; sandy; watered chiefly by tanks; and affording the great field for rice cultivation. The jungles, below the ghauts, can only be considered as extensive tracts of brushwood; those above, and in the ghauts, are composed of forest trees, and bamboo.

It has been found that the forest jungles of the western coast are extremely dangerous to approach during the dry season; and that they cannot be entered with tolerable safety until the rains have fallen plentifully; it is said to be comparatively safe to traverse them during the wet season, and during the period when vegetation is going on with vigour.—On the other hand, it is reckoned extremely unsafe to enter the forest jungles of the Northern Circars during the rainy season, or immediately after it; and the only period at which they can be traversed with comparative safety, is the *hottest season*.—This leads us to recur to the observation, formerly made, that the rains on the Western Coast fall during the hot months of June July, August; and those on the Eastern coast, during the cold months of October, November and December. Now, though the grass and almost all the small plants are withered, and dried up during the hot season on this coast, it is on the commencement of this season, nevertheless, that the trees, and larger shrubs put forth their new leaves; and they cast the old leaves during the cool, and dry weather, after the rains. If therefore the periods of foliation, and defoliation of trees *be the same on both coasts*, as appears to be the case, the relative salubrity, or insalubrity of the jungles may depend on these processes and the consequent decomposition of vegetable matter, as much, or more, than upon the circumstances merely of rain, or drought; the former being the healthy, and the latter the unhealthy periods, in both instances.

In a considerable portion of the Southern territories, rice culture takes place from the inundation of the Cauvery river, which is swollen by the Western rains, thus placing the surface of the soil under water, while, perhaps, the appearances of the atmosphere are such as belong exclusively to the dry season. Accordingly, these countries are frequently the seat of epidemic sickness, and they have suffered considerably, and with less interruption, from attacks of Cholera.

MONTHLY RETURNS

OF

SICK

OF

THE ARMY OF FORT ST. GEORGE,

FROM

THE BEGINNING OF THE YEAR 1815

TO

THE END OF THE YEAR 1820.

IN TEN PARTS,

EACH CONTAINING

The Returns of one Division.

MONTHLY RETURNS.

PART I.

NAGPORE SUBSIDIARY FORCE.

Nagpore Su

		Remained		*Entered.*		*Total.*		*Cholera Spasmodica.*		*Cholera.*		*Dysentery*		*Diarrhœa.*		*Fever.*	
		Enropeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
1816	For June	0	193	34	449	34	642	0	7	0	0	6	32	0	38	14	204
	,, July	8	238	13	272	21	510	0	1	0	0	5	85	0	38	10	119
	,, August	8	200	14	392	22	592	0	0	0	0	5	64	0	27	8	273
	,, September	7	239	24	515	31	754	0	1	0	0	5	37	0	15	17	492
	,, October	18	269	29	1255	47	1524	0	1	0	0	5	70	0	26	34	1049
	,, November	13	559	14	735	27	1294	0	0	0	0	2	50	0	39	16	847
	,, December	11	472	11	556	22	1028	0	2	0	0	4	35	0	21	12	624
1817	For January	10	484	11	368	21	852	0	2	0	0	7	30	0	17	10	488
	,, February	12	487	11	256	23	743	0	0	0	0	7	28	0	5	7	413
	,, March	7	465	12	375	19	840	1	0	0	0	2	35	1	21	5	487
	,, April	3	75	2	73	5	148	0	0	0	0	0	0	0	2	3	88
	,, August	5	76	3	174	8	250	0	0	0	0	0	2	0	6	6	148
	,, September	2	96	10	315	12	411	0	0	0	0	2	2	0	3	8	315
	,, October	7	180	11	613	18	793	0	0	0	0	2	2	0	2	15	711
1818	For January	5	337	7	428	12	765	0	0	0	0	0	1	0	47	6	330
	,, February	3	370	15	305	18	675	0	0	0	0	0	0	0	42	4	326
	,, May	1	186	13	253	14	439	1	28	0	0	0	3	0	20	0	163
	,, June	7	368	15	795	22	1163	1	229	0	0	0	4	0	68	5	366
	,, July	10	383	65	437	75	820	4	24	0	0	0	0	0	0	15	323
	,, August	16	289	62	502	78	791	2	17	0	0	0	0	0	0	23	359
	,, September	49	349	64	346	113	695	0	10	0	0	0	0	0	0	78	374
	,, October	36	336	99	712	135	1048	0	4	0	0	11	44	0	0	109	710
	,, November	113	386	240	667	353	1053	0	0	0	0	32	37	0	0	299	717
	,, December	49	474	125	715	174	1189	1	1	0	0	22	35	0	0	131	861
1819	For January	65	1056	118	741	183	1797	0	0	0	0	46	70	0	0	108	1302
	,, February	51	835	45	378	96	1213	0	0	0	0	21	5	0	0	47	837
	,, March	30	445	62	487	92	932	0	0	0	0	24	32	0	0	35	516
	,, April	38	437	55	503	93	940	0	0	0	0	22	64	2	0	32	394
	,, May	30	374	133	557	163	931	0	2	0	0	18	32	33	36	71	361
	,, June	51	370	126	664	177	1034	0	6	0	0	14	15	12	45	100	458
	,, July	59	381	161	673	220	1054	1	9	0	0	38	52	10	34	118	527
	,, August	73	398	153	629	226	1027	6	15	0	0	50	78	2	38	118	514
	,, September	73	391	113	747	186	1138	1	39	0	0	29	44	1	22	97	644
	,, October	70	452	133	1000	203	1452	2	54	0	0	27	36	5	16	103	954
	,, November	61	389	109	797	170	1186	3	22	0	0	24	31	2	27	89	709
	,, December	67	473	93	787	160	1260	1	12	0	0	21	42	1	13	72	755
1820	For January	59	473	110	724	169	1197	0	5	0	0	21	41	4	5	70	566
	,, February	64	400	79	536	143	936	0	5	0	0	22	23	0	9	49	334
	,, March	47	334	91	506	138	840	0	3	0	0	11	10	1	11	53	331
	,, April	39	343	111	404	150	747	2	2	0	0	18	4	2	9	48	317
	,, May	62	314	115	399	177	713	0	4	0	0	20	17	3	12	61	278
	,, June	41	248	88	826	129	1074	1	36	0	0	17	21	1	64	49	536
	,, July	42	465	139	665	181	1130	16	34	0	0	40	31	2	61	61	544
	,, August	59	607	144	738	203	1345	7	33	0	0	54	56	4	69	57	641
	,, September	83	537	155	788	238	1325	5	8	0	0	52	24	2	69	115	710
	,, October	89	548	141	1007	230	1555	3	5	0	0	40	21	2	25	105	961
	,, November	80	680	101	626	181	1306	1	4	0	0	29	28	1	15	72	773
	,, December	72	516	95	517	167	1033	2	4	0	0	20	12	5	15	53	555

sidiary Force. *Table I.*

Hepatitis.		*Ophthalmia.*		*Rheumatism.*		*Ulcers.*		*Venereal.*		*Other diseases.*		*Cured.*		*Dead.*		*Transferred.*		*Remaining.*		*Strength.*	
Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
2	0	0	6	0	55	2	61	0	44	10	195	26	398	0	5	0	0	8	239	107	6562
1	0	0	5	0	0	1	100	0	41	4	121	12	305	1	5	0	0	8	200	105	6440
1	1	0	4	5	46	1	92	0	35	2	50	15	348	0	5	0	0	7	239	105	6633
0	1	0	9	6	42	0	73	1	28	2	56	7	477	1	5	5	28	18	244	102	6566
1	1	1	8	3	83	0	135	1	38	2	113	28	719	0	11	6	231	13	563	101	5360
0	0	0	8	4	86	1	108	1	37	3	119	16	662	0	16	0	141	11	475	101	6306
0	0	0	6	1	68	1	120	1	33	3	119	12	538	0	6	0	0	10	484	101	6495
0	0	0	1	0	72	1	100	0	39	3	103	9	333	0	6	0	157	12	356	101	6307
2	0	0	5	1	100	0	78	1	26	5	88	15	271	1	4	0	2	7	466	101	6631
1	0	0	6	2	77	1	83	0	33	6	98	9	350	1	4	0	0	9	486	100	6655
0	0	0	2	0	13	0	10	0	8	2	25	4	78	0	3	0	0	1	67	32	2056
1	0	0	6	0	19	0	23	0	11	1	35	5	127	0	4	1	0	2	119	30	2271
0	0	0	10	0	13	0	14	0	7	2	47	5	227	0	4	0	0	7	180	30	2241
0	0	0	2	1	8	0	15	0	8	0	45	12	346	0	7	0	0	6	440	30	2238
0	0	1	2	0	15	0	39	0	10	5	321	9	314	0	11	0	56	3	384	54	3077
0	0	1	7	0	16	0	34	0	21	13	229	12	303	0	9	0	0	6	363	54	3049
0	0	0	1	1	33	0	29	4	46	8	116	6	223	1	9	0	17	7	190	0	2956
0	0	0	6	3	51	0	75	5	76	8	288	11	732	1	38	0	0	10	393	118	4254
1	0	0	10	4	54	0	68	6	81	45	260	33	463	4	8	0	46	38	303	234	4135
3	0	0	14	4	52	0	62	7	72	39	215	25	455	4	16	0	0	49	320	230	4288
1	0	0	7	6	49	0	50	6	47	22	158	71	339	4	2	0	0	38	354	193	2077
4	1	0	5	5	53	0	53	0	60	6	118	81	563	4	11	0	25	50	449	187	3319
5	0	0	6	5	43	2	52	4	59	6	139	261	585	13	10	5	0	74	458	564	4561
1	1	1	7	1	38	2	52	3	64	12	130	114	584	7	13	0	0	53	592	532	4662
2	0	1	9	2	77	1	64	5	111	18	164	105	681	6	10	21	268	51	838	326	5102
2	0	0	4	2	60	3	50	7	75	14	182	57	581	1	4	0	14	38	614	112	4581
2	3	0	9	1	66	2	80	13	80	15	146	50	487	0	8	0	0	42	437	126	4492
6	2	0	14	0	77	4	103	8	99	19	187	61	445	2	7	0	0	30	488	275	4517
9	1	3	8	2	60	6	117	12	98	9	216	100	555	3	6	0	0	60	370	445	6015
1	2	2	20	2	108	3	103	12	87	21	190	116	645	2	8	0	0	59	381	542	6711
2	2	2	27	1	66	3	98	13	68	22	171	142	649	5	7	0	0	73	398	540	6749
0	0	0	19	2	55	4	84	20	70	20	154	142	626	11	10	0	0	73	391	522	6574
0	0	0	11	1	46	3	79	29	91	15	162	106	660	10	26	0	0	70	452	489	6297
1	0	1	0	4	49	2	80	32	96	16	167	123	923	19	37	0	0	61	492	485	6253
0	0	1	28	4	44	1	76	24	82	12	167	94	685	9	28	0	0	67	473	392	4579
9	1	1	5	4	51	2	101	23	80	26	200	97	764	4	18	0	5	59	473	464	6219
8	1	4	4	3	59	5	65	19	98	35	353	100	671	5	13	0	113	64	400	495	6383
5	3	2	3	4	45	3	64	26	87	32	363	93	511	3	15	0	27	47	383	477	6998
6	4	3	8	5	47	3	78	26	85	30	263	94	466	1	22	4	4	39	348	479	6947
8	0	3	9	3	44	4	67	27	86	35	209	87	414	1	14	0	5	62	314	482	7074
0	6	2	15	4	38	4	75	20	101	53	167	132	382	3	13	1	0	41	318	480	6246
8	1	2	13	2	54	3	85	16	105	30	159	87	601	0	8	0	0	42	465	467	6806
7	6	2	11	5	55	2	108	27	87	19	193	117	543	5	19	0	0	59	568	457	6917
7	1	2	14	8	65	2	125	19	93	43	248	116	746	4	23	0	1	83	575	573	8394
8	0	0	8	7	46	4	118	16	69	29	273	137	751	11	23	1	1	89	550	567	7223
8	0	0	8	11	50	4	124	17	85	40	276	144	801	6	23	0	0	80	731	577	8238
8	1	2	10	10	44	3	105	26	81	29	245	106	766	3	23	0	0	72	517	578	7308
4	2	2	5	18	35	10	125	19	92	34	188	85	577	0	14	17	0	65	442	547	7460

MONTHLY RETURNS.

PART II.

HYDRABAD SUBSIDIARY FORCE.

Hydrabad S

		Remained.		Entered.		Total.		Cholera Spasmodica.		Cholera.		Dysentery		Diarrhœa.		Fever.	
		Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
1815	For January	162	469	282	607	444	1076	0	0	0	0	142	111	0	0	134	324
	„ February	173	452	260	630	433	1082	0	0	2	0	117	108	0	0	109	311
	„ March	206	442	315	839	521	1281	0	0	6	2	122	133	0	0	156	402
	„ April	242	505	418	799	660	1304	0	0	1	3	134	94	0	30	224	458
	„ May	253	490	430	824	683	1314	0	0	4	1	157	160	0	0	191	464
	„ June	283	548	397	767	680	1315	0	0	0	1	180	153	0	15	162	403
	„ July	302	540	414	927	716	1467	0	0	0	0	183	249	0	0	168	470
	„ August	293	556	406	1282	699	1838	0	0	8	5	200	195	0	0	230	904
	„ September	236	657	341	1079	577	1736	0	0	1	2	179	193	0	0	183	737
	„ October	223	684	325	734	548	1418	0	0	8	1	199	125	0	0	137	525
	„ November	226	469	212	676	438	1145	0	0	7	3	116	67	0	0	104	420
	„ December	171	487	150	787	321	1274	0	0	3	3	88	52	0	1	78	600
1816	For January	124	471	213	598	337	1069	0	0	0	4	82	57	0	0	77	376
	„ February	133	445	198	770	331	1215	0	0	0	0	86	107	0	0	59	318
	„ March	148	498	222	6031	370	1129	0	0	1	0	80	81	0	0	51	311
	„ April	175	467	272	657	447	1124	0	0	0	0	94	112	0	0	85	322
	„ May	170	424	247	743	417	1167	0	0	0	12	78	125	0	0	68	340
	„ June	180	255	210	391	390	646	0	0	2	2	78	73	0	0	48	151
	„ July	144	338	289	594	433	932	0	0	1	2	120	135	0	0	80	185
	„ August	186	424	320	601	506	1025	0	0	2	6	145	156	0	0	140	218
	„ September	165	422	289	603	454	1025	0	0	4	6	118	118	0	0	117	250
	„ October	178	338	294	816	472	1154	0	0	3	2	128	100	0	0	121	315
	„ November	179	492	289	619	468	1111	0	0	5	1	134	76	0	0	122	340
	„ December	175	452	357	700	532	1152	0	0	0	0	140	82	0	0	99	318
1817	For January	201	499	308	415	509	914	0	0	0	0	124	48	0	0	85	202
	„ February	187	403	199	377	386	780	0	0	3	3	107	31	0	0	49	172
	„ March	115	341	266	455	411	796	0	0	6	3	135	48	0	0	53	179
	„ April	243	676	446	852	689	1528	0	0	8	4	154	123	0	0	105	582
	„ May	165	745	372	1121	537	1866	0	0	4	4	145	230	0	0	104	676
	„ June	181	576	333	685	514	1261	0	0	4	4	149	180	0	0	104	398
	„ July	186	478	480	1147	666	1625	0	0	0	4	178	183	0	0	209	588
	„ August	219	606	386	918	605	1524	0	0	1	3	177	181	0	0	130	493
	„ September	203	479	281	787	484	1266	0	0	1	4	151	119	0	0	87	270
	„ October	181	413	318	896	499	1309	0	0	2	4	169	113	0	0	91	403
	„ November	121	948	252	1166	373	2114	0	0	1	1	118	94	0	0	74	1127
	„ December	161	825	282	1020	443	1845	0	0	0	1	90	61	0	38	72	667
1818	For January	181	371	222	574	403	945	1	1	0	0	82	57	0	0	57	306
	„ February	205	726	211	659	416	1385	0	0	0	0	95	69	0	0	79	437
	„ March	167	698	226	848	393	1546	0	0	0	0	101	87	0	0	81	530
	„ April	173	733	177	803	350	1536	0	3	0	0	104	117	0	0	44	455
	„ May	100	745	156	842	256	1587	1	2	0	0	67	140	0	0	55	427
	„ June	176	829	243	724	419	1553	0	3	0	0	91	113	0	0	49	361
	„ July	166	640	530	1121	696	1761	155	400	0	0	161	141	0	0	110	432
	„ August	216	752	464	1154	680	1906	35	240	0	0	193	151	0	0	226	640
	„ September	253	852	383	831	636	1683	13	123	0	0	192	97	0	0	231	618
	„ October	150	676	446	1387	596	2063	0	18	0	0	160	82	0	0	270	1193
	„ November	191	1383	299	1216	490	2599	0	91	0	0	159	74	0	0	168	1705
	„ December	112	1129	211	877	323	2006	1	20	0	0	77	102	0	0	95	1025
1819	For January	154	1121	219	583	373	1704	4	5	0	0	87	88	0	0	62	899
	„ February	171	556	252	481	423	1037	3	4	0	0	96	48	0	0	57	388
	„ March	195	458	155	588	350	1046	5	7	0	0	76	56	0	0	32	359
	„ April	158	677	253	811	411	1488	9	53	0	0	124	109	0	0	87	587
	„ May	126	536	186	740	312	1276	1	120	0	0	70	33	0	0	44	467
	„ June	159	481	209	573	368	1054	8	81	0	0	71	16	0	0	61	274
	„ July	173	391	274	538	447	929	11	45	0	0	84	86	0	0	93	287
	„ August	182	340	246	568	428	908	4	25	0	0	74	66	0	0	118	336
	„ September	180	482	247	494	427	976	2	19	0	0	65	63	0	0	123	381
	„ October	201	342	271	691	472	1033	4	17	0	0	86	53	2	2	147	382
	„ November	188	473	205	961	393	1434	4	22	0	0	69	44	5	4	102	708
	„ December	156	841	180	946	336	1787	2	24	0	0	51	61	2	26	72	839
1820	For January	129	465	196	755	325	1220	2	3	0	0	50	49	0	0	75	472
	„ February	126	647	174	589	300	1236	2	1	0	0	40	42	0	0	61	485
	„ March	149	633	184	900	333	1533	2	6	0	0	29	37	4	15	48	537
	„ April	142	697	179	810	321	1507	3	24	0	0	25	57	0	0	62	560
	„ May	130	579	152	771	282	1350	2	95	0	0	18	28	7	42	57	415
	„ June	83	541	194	661	277	1202	21	115	0	0	38	48	3	27	43	320
	„ July	146	600	254	850	400	1450	9	144	0	0	80	62	17	96	55	420
	„ August	172	409	242	599	414	1008	10	9	0	0	105	54	22	32	49	338
	„ September	183	444	206	550	389	994	1	25	0	0	96	45	13	20	61	362
	„ October	170	370	257	795	427	1165	3	182	0	0	97	25	5	10	108	395
	„ November	173	477	221	550	394	1027	0	104	0	0	84	22	7	9	98	367
	„ December	167	547	202	671	369	1218	0	151	0	0	71	22	3	30	72	443

sidiary Force. Table II.

epatitis.		Ophthalmia.		Rheumatism.		Ulcers.		Venereal.		Other diseases.		Cured.		Dead.		Transferred.		Remaining.		Strength.	
Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
38	8	7	19	22	117	9	113	51	127	41	257	245	616	13	7	13	1	173	452	2004	11713
37	4	17	21	16	128	23	109	52	113	60	288	212	631	15	9	0	0	206	442	2438	12105
42	9	28	25	27	112	27	108	61	117	52	373	272	761	7	14	0	3	242	503	2407	12348
43	0	30	26	33	121	60	115	27	99	108	358	394	804	13	10	0	0	253	490	2393	12561
44	1	26	20	25	141	20	64	57	147	159	316	390	854	10	12	0	0	283	448	2367	12420
42	5	21	29	29	163	46	90	47	149	159	308	367	753	11	12	0	10	302	540	2335	13092
52	7	19	71	29	157	38	97	63	134	164	288	411	899	12	9	0	3	293	556	2272	12642
39	3	20	86	22	223	26	122	66	158	88	148	391	903	15	9	57	269	236	657	2101	12988
25	4	35	57	23	205	31	111	46	128	48	309	310	974	28	11	16	67	223	684	2572	13584
31	2	9	37	22	175	23	105	42	116	77	352	309	782	13	13	0	154	226	469	2670	14919
38	3	13	41	23	164	19	81	44	95	74	274	250	651	17	7	0	0	171	487	2162	13541
18	8	4	24	21	156	21	89	35	100	53	241	179	775	13	13	3	0	126	486	1650	13543
28	8	6	21	31	149	26	102	27	118	60	234	194	615	10	7	0	5	133	442	1634	13503
31	7	6	24	19	191	15	125	54	138	62	305	175	573	8	4	2	144	146	494	1799	13411
43	4	7	11	24	150	32	105	70	151	62	316	192	614	3	18	0	13	175	484	1770	13895
26	3	12	15	23	125	38	98	85	137	84	312	255	628	12	6	10	50	170	440	1978	14324
44	2	16	17	19	161	36	112	88	124	68	274	228	673	9	9	0	0	180	485	1799	13077
27	5	12	9	26	74	39	41	101	78	57	203	213	371	5	6	28	9	144	260	1679	8418
25	6	5	9	26	120	38	79	78	135	60	261	236	513	11	7	1	26	185	386	1709	9501
27	2	9	11	21	106	35	101	69	131	58	294	326	620	12	6	0	4	168	395	1680	10632
32	4	6	15	17	98	20	76	85	115	53	343	249	615	23	12	4	18	178	380	1591	10453
25	4	3	16	22	141	37	83	82	104	52	389	275	604	16	3	2	68	179	479	1613	10121
29	3	5	11	27	132	23	72	77	225	46	291	259	609	26	15	0	6	183	481	1850	9186
39	6	4	29	23	150	33	81	95	118	109	368	323	637	15	8	0	10	194	497	1829	9569
30	2	15	15	35	130	30	71	89	112	101	314	298	503	9	5	15	3	187	403	1930	10245
40	3	5	16	21	122	6	69	89	103	66	262	210	423	11	3	20	13	145	341	1891	9742
28	6	2	17	33	131	6	65	72	83	76	262	202	392	16	5	0	37	193	362	1783	10153
56	2	13	24	35	193	35	101	158	113	125	386	467	759	16	10	0	39	206	729	2632	14622
43	4	7	24	28	218	12	104	116	138	78	468	264	921	21	14	49	353	203	578	2070	13719
43	2	6	14	33	150	8	83	94	99	73	332	291	732	16	6	0	15	207	508	2186	14132
44	2	6	16	41	224	20	89	79	134	89	385	418	955	16	13	3	2	229	655	2236	14146
42	3	8	44	34	194	19	88	82	164	112	354	385	870	10	7	10	34	200	613	2224	13621
34	3	10	33	14	116	7	82	108	177	72	362	270	649	21	17	0	13	193	587	1702	12684
54	2	4	12	38	190	27	110	68	171	66	304	254	558	16	5	52	72	177	674	1420	8432
21	2	19	20	27	126	17	131	52	110	44	503	207	1308	1	15	5	1	160	790	1530	11885
16	0	10	15	27	145	15	139	50	103	163	676	225	988	19	40	12	29	187	788	1523	11937
23	0	9	8	23	68	20	83	69	94	119	338	227	506	13	11	2	0	161	428	1400	8125
21	3	6	19	31	175	19	143	75	170	112	309	200	605	8	19	23	27	185	734	1355	7268
22	8	6	13	20	162	15	111	61	155	86	480	203	640	8	20	4	127	178	759	1179	9162
26	4	2	10	20	178	27	240	58	179	69	350	171	779	8	10	33	34	138	713	1331	9512
13	4	2	6	14	171	12	226	37	217	55	384	128	779	8	22	3	29	117	757	1037	10017
44	2	4	17	26	194	15	84	72	182	143	597	230	649	4	8	33	277	152	619	1566	12544
36	1	3	18	33	133	32	121	78	129	88	327	391	861	90	162	1	0	211	738	1873	17915
26	5	5	22	33	201	14	132	75	160	73	352	354	913	39	56	26	105	261	832	2055	12348
28	3	16	21	20	168	15	119	55	135	66	399	394	857	27	34	0	9	215	783	1933	12626
28	2	6	16	14	164	9	101	58	159	521	328	348	890	30	42	0	1	218	1130	1490	11944
20	1	6	17	12	126	5	89	76	115	44	384	270	961	35	118	0	1	185	1519	1433	10277
13	8	5	13	13	152	6	119	63	142	50	425	158	690	7	34	25	128	133	1154	1813	10251
34	6	1	13	14	105	4	104	90	135	77	349	180	680	19	28	3	0	171	996	1826	10160
58	4	3	10	13	110	6	104	136	109	51	260	190	583	10	12	3	0	214	442	1686	10318
34	2	7	43	14	105	4	99	126	105	52	310	201	510	11	22	0	0	134	511	1402	10362
41	7	5	22	9	115	6	121	78	120	52	394	244	748	11	28	0	0	156	712	1415	11765
43	2	0	11	16	114	7	76	52	105	79	348	177	792	5	54	3	1	127	429	1616	9888
29	2	4	20	16	104	11	73	117	147	51	234	202	634	6	29	0	0	160	391	1829	10755
26	2	10	22	21	76	11	65	125	134	66	232	250	533	11	20	2	33	184	343	1483	9828
25	3	19	37	18	53	10	50	104	153	56	185	236	548	9	10	0	0	183	350	1491	10097
21	2	6	35	19	63	11	58	113	131	67	224	208	622	12	15	0	0	207	339	1478	10730
23	0	15	31	20	88	8	57	124	153	43	250	265	585	16	18	0	1	191	429	1567	11486
28	2	7	38	18	96	7	78	122	181	31	261	217	785	9	28	11	0	156	621	1572	10923
22	5	7	28	16	134	5	100	112	199	47	371	199	923	12	38	0	8	125	818	1580	13174
21	5	9	18	22	89	7	84	85	157	54	343	189	689	5	20	1	0	130	511	1569	11592
22	2	2	14	22	[illegible]	5	68	88	164	58	362	143	663	7	14	3	0	147	559	1584	11813
27	9	7	24	25	135	12	81	78	182	101	507	182	877	7	23	0	7	144	626	1665	14758
22	1	8	30	26	134	12	120	104	199	59	382	184	842	3	35	3	16	131	614	1588	14786
17	1	1	20	21	114	5	92	78	182	78	361	164	715	2	63	0	0	116	572	1622	12491
16	1	0	9	22	110	7	90	55	162	72	320	126	646	7	47	0	0	144	509	1651	12214
26	3	13	10	28	123	6	98	78	174	85	320	220	883	8	53	0	9	172	505	1635	14065
29	2	13	10	27	85	6	80	80	141	73	257	221	549	12	20	0	0	181	439	1682	10321
37	1	6	16	20	84	8	64	73	142	74	235	204	558	17	37	0	0	168	399	1660	10441
44	4	14	19	19	71	5	68	59	133	74	258	220	534	22	87	13	1	173	543	1631	10978
47	5	7	26	11	69	8	94	63	117	69	214	210	588	17	23	1	41	166	375	1639	10757
48	2	7	15	16	122	6	104	72	113	74	216	199	690	9	87	2	7	159	434	1626	11241

MONTHLY RETURNS.

PART III.

NORTHERN DIVISION.

Northern

		Remained.		Entered.		Total.		Cholera Spasmodica.		Cholera.		Dysentery		Diarrhœa.		Fever.	
		Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
1815	For January	84	307	84	316	168	623	0	0	0	0	29	24	0	11	21	26
	,, February	76	276	72	172	148	448	0	0	0	1	18	13	0	9	9	10
	,, March	74	231	133	265	207	496	0	0	0	1	19	16	1	8	22	13
	,, April	112	221	92	230	204	451	0	0	0	0	28	13	0	7	28	12
	,, May	89	194	118	190	207	384	0	0	0	1	31	15	1	1	49	8
	,, June	97	183	86	298	183	481	0	0	0	1	22	28	1	3	31	10
	,, July	77	230	91	312	168	542	0	0	0	3	25	15	0	1	29	19
	,, August	71	235	97	303	168	538	0	0	0	0	26	19	3	6	51	17
	,, September	72	232	182	403	254	635	0	0	0	0	62	21	2	3	67	30
	,, October	130	326	146	641	276	967	0	0	0	0	58	12	5	1	56	74
	,, November	106	590	84	449	190	1039	0	0	0	0	27	9	3	2	35	79
	,, December	90	444	110	363	200	807	0	0	0	0	27	38	0	0	11	51
1816	For January	87	286	102	289	189	575	0	0	0	1	33	22	2	4	27	28
	,, February	79	260	87	290	166	550	0	0	0	0	25	12	1	2	20	29
	,, March	91	321	86	331	177	652	0	0	0	3	16	17	0	7	26	33
	,, April	88	288	90	291	178	579	0	0	0	1	25	6	1	6	17	27
	,, May	108	241	104	286	212	527	0	0	0	0	23	9	2	3	39	24
	,, June	91	232	96	429	187	661	0	0	0	2	23	11	1	21	27	27
	,, July	89	318	97	364	186	682	0	0	2	0	22	27	0	22	24	25
	,, August	91	305	90	458	181	763	0	0	1	1	38	20	0	24	24	27
	,, September	88	360	105	348	193	708	0	0	0	0	28	20	3	22	36	27
	,, October	83	255	101	374	184	629	0	0	1	5	15	13	3	13	28	22
	,, November	81	308	103	330	184	638	0	0	1	1	18	6	4	11	25	23
	,, December	89	306	70	392	159	698	0	0	0	3	15	11	1	8	20	29
1817	For January	70	421	59	507	129	928	0	0	0	3	12	11	1	9	13	41
	,, February	62	530	36	364	98	894	0	0	0	2	8	3	1	7	9	39
	,, March	63	465	72	538	135	1003	0	0	0	0	19	10	0	8	13	42
	,, April	68	534	92	698	160	1232	0	0	0	0	20	22	1	21	21	52
	,, May	137	739	131	553	268	1292	0	0	0	0	42	32	1	21	37	51
	,, June	106	617	132	624	238	1241	0	0	0	0	29	33	1	22	26	51
	,, July	110	605	154	758	264	1363	0	0	0	4	43	42	0	42	31	63
	,, August	148	661	119	722	267	1383	0	0	0	2	57	37	0	45	28	64
	,, September	139	570	124	674	263	1244	0	0	0	3	64	38	1	14	27	68
	,, October	116	578	139	893	255	1471	0	0	1	0	41	35	2	9	35	86
	,, November	125	692	145	1030	270	1722	0	0	0	1	31	31	0	7	31	119
	,, December	155	1088	125	1178	280	2266	0	0	0	2	31	38	0	9	39	170
1818	For January	118	1065	113	614	231	1679	0	0	0	1	30	33	0	3	40	117
	,, February	108	864	92	595	200	1459	0	0	0	0	27	19	4	4	20	96
	,, March	97	698	105	562	202	1260	0	0	3	10	17	37	1	6	17	59
	,, April	55	660	37	499	92	1159	0	0	4	43	6	29	1	17	19	44
	,, May	39	615	57	436	96	1051	0	0	11	41	8	15	0	48	20	32
	,, June	50	484	48	392	98	876	0	0	11	45	9	15	1	28	9	23
	,, July	56	441	41	608	97	1049	0	0	9	130	9	19	1	28	10	30
	,, August	57	411	47	672	104	1083	0	0	18	77	10	32	8	29	7	40
	,, September	44	493	47	546	91	1039	7	41	0	0	5	18	5	33	12	40
	,, October	25	501	47	613	72	1114	1	23	0	0	11	24	1	20	11	50
	,, November	45	560	32	680	77	1240	2	36	0	0	12	25	0	17	15	61
	,, December	43	703	24	671	67	1374	1	12	0	0	11	33	1	18	18	73
1819	For January	37	601	27	727	64	1328	0	8	0	0	12	25	3	25	14	60
	,, February	42	583	25	505	67	1088	0	9	0	0	10	17	3	27	16	44
	,, March	41	470	47	469	88	939	1	6	0	0	12	12	4	14	24	32
	,, April	44	389	27	458	71	847	0	18	0	0	8	8	2	15	15	27
	,, May	43	384	36	580	79	964	1	17	0	0	10	13	2	32	16	29
	,, June	46	457	45	677	91	1134	0	27	0	0	8	14	1	56	0	29
	,, July	44	501	31	608	75	1109	3	85	0	0	7	10	0	43	6	32
	,, August	43	457	30	513	73	970	0	37	0	0	5	12	7	24	11	31
	,, September	45	408	24	391	69	799	1	8	0	0	8	11	4	26	13	28
	,, October	39	397	33	529	72	926	1	4	0	0	10	12	3	13	14	34
	,, November	46	440	31	610	77	1050	0	3	0	0	12	17	4	24	12	38
	,, December	42	435	29	727	71	1162	0	5	0	0	10	20	6	14	9	43
1820	For January	18	488	29	555	47	1043	0	2	0	0	7	18	5	29	7	42
	,, February	20	466	20	648	40	1114	0	3	0	0	11	26	3	26	4	41
	,, March	14	420	35	596	49	1016	0	8	0	0	12	16	0	17	11	37
	,, April	32	307	19	480	51	787	0	0	0	0	6	18	1	3	8	23
	,, May	29	291	22	548	51	839	0	3	0	0	7	15	0	8	4	27
	,, June	25	317	25	486	50	803	1	3	0	0	6	16	0	11	11	27
	,, July	31	295	19	646	50	941	0	2	0	0	7	17	3	12	6	47
	,, August	19	336	38	694	57	1030	0	92	0	0	8	26	6	14	3	35
	,, September	29	369	23	483	52	852	2	22	0	0	3	20	2	38	5	26
	,, October	28	304	21	413	49	717	1	7	0	0	3	13	3	37	7	24
	,, November	16	307	15	343	31	650	0	6	0	0	4	9	3	25	4	11
	,, December	12	276	22	360	34	636	3	14	0	0	2	15	2	11	4	12

Division. *Table III,*

epatitis.		Ophthalmia.		Rheumatism.		Ulcers.		Venereal.		Other diseases.		Cured.		Dead.		Transferred.		Remaining.		Strength.	
uropeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
3	2	4	10	9	70	21	47	57	49	24	147	88	319	4	22	0	6	76	276	748	7673
1	2	2	5	13	77	18	39	65	58	22	142	71	198	3	10	0	9	74	231	892	8490
7	2	2	4	16	79	35	29	63	71	42	150	90	259	5	6	0	10	112	221	873	8239
9	3	3	6	13	65	25	29	52	73	46	131	109	241	6	6	0	10	89	194	889	8721
7	2	3	5	12	74	19	29	50	64	32	104	104	148	6	1	0	52	97	183	921	6934
6	0	2	6	15	65	16	35	56	73	34	162	100	247	5	4	1	0	77	230	949	7033
6	4	2	9	12	65	18	25	44	80	32	145	92	266	5	14	0	27	71	235	931	7179
4	5	0	12	14	42	11	37	35	84	24	163	92	287	4	11	0	8	72	232	924	6328
8	1	6	9	13	68	29	30	42	67	25	132	113	272	11	20	0	17	130	326	1170	7568
12	2	10	10	15	41	15	16	57	44	48	94	156	252	14	17	0	108	106	590	1159	6179
13	1	0	2	23	53	22	22	45	43	22	115	86	563	13	32	1	0	90	444	1067	6259
13	4	3	1	25	51	25	26	51	45	45	129	105	488	8	33	0	0	87	286	1084	6981
11	0	5	3	14	42	19	21	52	46	26	148	102	293	8	22	0	0	79	260	889	6764
13	3	1	6	14	49	16	21	50	38	26	123	70	212	5	16	0	1	91	321	891	6887
13	3	2	8	14	70	17	22	61	42	28	148	82	317	7	9	0	38	88	288	844	7272
16	6	0	6	15	65	12	22	57	43	35	154	67	325	3	5	0	8	108	241	865	7297
21	3	0	2	20	57	16	27	55	40	36	146	101	285	10	10	0	0	101	232	867	7485
28	3	2	5	5	70	19	53	40	91	42	134	89	314	9	13	0	16	89	318	852	8360
26	3	3	6	9	66	18	63	45	104	37	133	94	370	1	7	0	0	91	305	853	10492
12	3	3	24	14	66	13	63	47	114	29	177	82	388	11	11	0	4	88	360	842	10428
12	2	0	15	12	72	10	54	57	89	35	164	104	425	6	24	0	4	83	255	831	11538
13	1	2	9	15	66	12	42	55	65	40	186	98	295	5	20	0	6	81	308	828	9877
9	0	8	15	14	74	11	50	66	60	28	188	90	305	5	26	0	1	89	306	864	8555
9	1	3	8	12	84	23	38	56	74	20	176	86	248	3	22	0	7	70	421	865	9742
4	3	3	5	16	111	17	47	41	82	22	240	63	353	4	27	0	18	62	530	731	9995
5	1	1	4	13	93	12	47	29	75	20	271	30	419	4	9	0	1	64	465	720	4254
4	1	0	4	9	117	19	47	41	93	30	300	68	389	4	12	0	47	63	555	759	9457
10	1	1	7	17	132	9	64	48	114	33	347	67	480	3	17	0	24	90	711	759	12608
27	3	5	6	24	173	27	76	62	129	43	333	147	517	7	19	10	74	104	682	1360	12061
13	0	3	8	17	173	32	111	73	121	44	255	120	570	8	14	0	39	110	618	1367	13553
11	1	0	23	20	134	30	97	89	92	40	295	111	674	4	15	0	2	149	672	1371	13305
10	2	0	15	18	130	31	84	73	87	50	339	125	782	2	20	0	0	140	581	1312	12010
9	1	1	16	18	98	25	58	58	87	60	247	133	558	8	27	0	86	122	573	1299	12531
4	0	2	13	15	105	29	66	62	90	64	284	122	617	8	38	0	50	125	766	1289	12853
8	1	2	12	12	83	29	53	106	69	51	275	104	737	7	38	0	35	159	912	1287	9998
6	1	2	8	9	89	31	61	121	75	41	281	149	1073	10	114	0	1	121	1078	1270	8961
9	1	1	6	13	74	26	49	73	67	39	275	115	692	8	104	0	30	108	853	1068	11242
12	0	2	5	13	87	14	50	60	80	48	252	101	571	3	61	0	200	96	627	1054	9720
16	0	1	7	14	70	15	44	66	62	52	431	86	475	4	51	8	60	104	674	1024	8909
12	0	0	11	9	67	6	45	12	60	23	439	45	545	4	31	0	0	43	583	342	10107
9	0	0	10	10	61	5	51	14	89	19	408	33	534	13	30	0	0	50	487	411	11642
8	0	0	10	8	70	5	42	28	101	19	334	35	395	3	25	0	13	60	443	359	10826
9	0	0	13	8	86	5	74	34	110	12	280	35	512	3	55	0	0	59	482	402	10027
6	0	0	18	8	104	5	87	31	103	11	224	52	545	8	37	0	0	44	501	373	10595
7	0	0	20	9	84	5	76	13	95	28	267	30	511	8	29	0	1	53	498	129	9640
3	0	2	14	7	79	4	67	8	76	24	302	26	469	2	46	0	0	44	599	133	9639
4	0	0	9	9	77	5	42	7	65	23	356	32	516	2	60	0	2	43	662	404	9593
3	0	0	11	6	80	5	51	4	78	18	361	26	721	3	47	0	24	38	582	397	9683
3	0	1	12	7	98	3	57	4	89	17	405	22	690	1	31	0	23	41	584	377	10268
7	0	2	12	5	89	5	39	3	77	16	376	24	601	2	15	0	0	41	472	419	9171
8	0	2	12	4	84	6	49	5	71	22	366	39	533	5	15	0	2	41	389	424	9998
9	1	2	7	6	70	5	58	5	77	19	315	25	448	3	8	0	3	43	388	381	10252
8	2	1	9	4	90	6	74	6	86	25	347	30	488	2	10	0	1	47	465	494	10434
9	0	2	14	7	113	6	94	25	145	33	373	44	596	3	12	0	23	44	503	474	10970
3	0	2	7	4	119	10	77	10	123	30	321	32	537	0	32	0	30	43	510	498	9842
1	0	0	6	8	116	5	55	7	118	29	286	23	540	5	16	0	1	45	413	484	9345
4	0	0	6	9	77	4	44	6	94	20	253	25	415	5	11	0	0	39	373	465	9638
3	0	1	6	4	85	7	49	4	112	25	301	21	458	5	24	0	0	46	444	472	10383
1	0	0	6	7	112	9	49	11	120	21	332	31	596	3	19	0	0	43	435	457	10600
1	0	0	9	8	111	9	50	8	114	20	405	51	669	2	36	0	15	18	442	394	10984
1	1	0	10	6	84	2	52	7	100	12	322	25	547	2	19	0	11	20	466	463	12012
1	0	1	3	2	104	1	57	4	97	13	380	20	577	6	16	0	22	14	499	451	11973
2	2	1	4	7	78	2	55	1	92	13	371	14	582	3	10	0	13	32	411	405	11225
3	2	0	5	8	58	2	48	4	96	19	327	24	471	0	14	0	0	27	302	403	10401
2	4	0	3	11	62	2	64	7	112	18	293	24	534	2	7	0	0	25	298	403	10734
1	2	0	0	8	63	1	70	5	90	17	277	17	500	2	7	0	1	31	295	410	10758
3	0	0	3	8	47	1	54	3	84	19	247	28	610	3	10	0	9	19	312	435	10494
2	4	0	5	8	20	1	72	6	126	23	318	24	604	4	49	0	0	29	377	438	12750
6	1	0	5	8	69	0	57	7	115	19	260	21	492	3	28	0	18	28	314	363	11844
5	5	0	5	7	78	1	48	5	81	17	203	29	395	3	16	0	1	17	305	437	10278
4	0	1	6	3	76	1	57	2	88	9	267	18	358	1	14	0	0	12	278	434	10370
2	1	0	6	3	52	2	57	2	71	14	283	18	348	1	29	0	0	15	259	366	10391

MONTHLY RETURNS.

PART IV.

CEDED DISTRICTS.

Ceded

		Remained		*Entered.*		*Total.*		*Spasmodic Cholera.*		*Cholera.*		*Dysentery*		*Diarrhæ.*		*Fever.*	
		Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
1815	For January	93	109	89	147	182	256	0	0	0	0	35	14	1	2	36	70
	,, February	98	50	61	114	159	164	0	0	0	0	33	4	1	1	24	30
	,, March	96	74	84	78	180	152	0	0	0	0	28	2	2	4	45	33
	,, April	94	81	81	136	175	217	0	0	0	0	27	12	0	2	41	44
	,, May	83	238	88	348	171	586	0	0	0	0	32	57	2	11	14	216
	,, June	76	243	90	304	166	547	1	0	0	0	35	27	2	13	15	166
	,, July	97	223	87	247	184	470	2	0	0	0	42	10	1	12	16	116
	,, August	98	179	73	187	171	366	2	0	0	0	33	9	0	3	25	83
	,, September	84	171	19	180	103	351	0	0	0	0	27	6	0	5	13	81
	,, October	46	150	34	181	80	331	0	0	0	0	18	5	0	3	15	71
	,, November	54	142	39	258	93	400	0	5	0	0	24	2	0	2	24	151
	,, December	43	189	207	281	250	470	0	0	0	0	66	4	0	2	42	179
1816	For January	96	194	67	269	163	463	0	0	0	0	43	5	0	9	27	175
	,, February	86	191	60	295	146	486	0	0	0	0	32	7	0	2	31	119
	,, March	77	234	95	239	178	473	0	0	0	0	32	3	0	7	49	93
	,, April	137	182	130	273	267	455	0	0	0	0	48	8	0	4	65	94
	,, May	130	195	142	268	272	463	0	0	0	0	61	7	0	5	44	178
	,, June	213	290	131	367	344	657	0	0	0	0	73	15	0	2	26	239
	,, July	169	282	186	366	355	648	0	0	0	0	86	29	0	12	37	194
	,, August	157	239	186	242	343	481	0	0	0	0	78	27	0	1	29	89
	,, September	210	235	232	161	442	396	0	0	0	0	92	28	3	2	42	66
	,, October	174	197	285	214	459	411	0	0	0	0	113	19	0	2	30	75
	,, November	155	215	217	302	372	517	0	0	0	0	87	14	0	6	26	93
	,, December	156	253	243	288	399	541	0	0	0	0	83	12	3	4	51	132
1817	For January	145	251	229	244	374	495	0	0	0	0	81	12	1	1	52	96
	,, February	131	272	310	262	441	534	0	0	0	0	76	17	0	5	44	97
	,, March	149	278	340	267	489	545	0	3	0	0	51	9	0	3	122	101
	,, April	136	248	220	347	356	595	0	0	0	0	31	14	0	4	194	135
	,, May	154	402	188	548	342	950	0	0	0	0	26	15	0	13	193	556
	,, June	157	315	124	380	281	695	0	0	0	0	24	20	0	30	108	262
	,, July	107	192	112	112	219	304	0	0	0	0	24	21	1	14	31	97
	,, August	102	173	72	90	174	263	0	0	0	0	21	25	2	4	22	69
	,, September	72	156	107	115	179	271	0	0	0	0	17	16	0	7	19	73
	,, October	110	159	91	145	201	304	1	0	0	0	16	14	0	18	28	52
	,, November	101	136	165	261	266	397	2	0	0	0	42	19	0	5	41	76
	,, December	169	207	145	197	314	404	1	0	0	0	66	26	0	3	51	118
1818	For January	196	265	243	351	439	616	3	0	0	0	85	18	2	6	66	168
	,, February	148	204	238	181	386	385	0	1	0	0	77	14	1	3	57	117
	,, March	163	185	519	141	682	326	0	0	0	0	326	14	8	2	78	90
	,, April	327	160	347	126	674	286	0	0	0	0	278	16	0	2	72	81
	,, May	219	148	257	150	476	298	0	0	0	0	170	12	1	3	43	80
	,, June	230	141	162	132	392	273	0	0	0	0	123	9	0	4	31	77
	,, July	193	139	176	152	369	291	0	0	0	0	88	4	0	7	31	87
	,, August	196	111	159	70	355	181	1	0	0	0	72	7	0	7	40	37
	,, September	92	93	116	119	208	212	37	15	0	0	26	3	0	5	19	55
	,, October	90	98	107	126	197	224	61	36	0	0	17	1	1	4	20	46
	,, November	85	82	98	159	183	241	49	22	0	0	15	3	0	3	16	63
	,, December	84	111	59	114	143	225	11	19	0	0	18	1	0	1	18	56
1819	For January	64	101	56	243	120	344	0	9	0	0	9	6	0	3	21	81
	,, February	59	144	51	86	110	230	0	0	0	0	5	9	0	1	15	43
	,, March	60	140	29	77	89	217	0	0	0	0	4	7	0	2	17	49
	,, April	18	211	5	232	23	443	0	24	0	0	3	16	0	11	3	140
	,, May	10	197	5	154	15	351	0	17	0	0	2	9	0	5	3	120
	,, June	10	172	2	115	12	287	0	12	0	0	2	7	0	2	3	86
	,, July	6	140	5	188	11	328	0	4	0	0	0	7	0	0	4	119
	,, August	6	196	6	362	12	558	0	5	0	0	1	12	0	0	3	239
	,, September	6	202	4	246	10	448	0	15	0	0	0	7	0	0	1	148
	,, October	6	153	11	369	17	522	0	13	0	0	2	5	0	5	5	213
	,, November	6	271	5	709	11	980	0	19	0	0	1	13	0	10	4	446
	,, December	5	339	7	463	12	802	0	15	0	0	4	7	0	6	4	302
1820	For January	4	257	2	323	6	580	0	8	0	0	2	6	0	1	1	185
	,, February	84	234	105	353	189	587	10	136	0	0	60	6	0	2	67	143
	,, March	66	207	97	271	163	478	0	32	0	0	38	5	0	1	47	126
	,, April	79	183	126	246	205	429	2	23	0	0	39	5	0	1	57	174
	,, May	109	166	157	267	266	433	9	38	0	0	60	8	0	5	55	168
	,, June	126	164	122	262	248	426	8	34	0	0	64	13	0	3	33	138
	,, July	25	174	155	247	180	421	12	31	0	0	72	13	0	4	41	121
	,, August	59	223	132	255	191	478	4	19	0	0	57	18	0	21	57	133
	,, September	76	137	143	162	219	299	1	11	0	0	42	14	0	0	62	89
	,, October	81	139	91	170	172	309	1	5	0	0	31	10	0	0	47	102
	,, November	55	140	104	209	159	349	2	0	0	0	21	3	0	0	45	112
	,, December	47	185	62	234	109	419	0	0	0	0	9	5	0	3	36	157

Hepatitis.		Opthalmia		Rheumatism.		Ulcers.		Venereal.		Other diseases.		Cured.		Dead.		Transferred.		Remaining.		Strength.	
Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
32	2	11	10	6	34	1	22	47	36	13	65	79	158	5	3	0	1	98	94	848	4325
37	1	8	4	6	36	4	13	35	29	10	46	62	89	1	1	0	0	96	74	851	3241
34	2	6	2	7	31	3	8	39	26	16	44	82	67	4	4	0	0	94	81	831	2757
36	1	1	1	5	41	46	31	3	14	16	74	89	110	3	9	0	0	83	97	830	2519
43	3	10	2	5	61	5	41	39	78	21	117	85	310	8	6	2	27	76	243	825	6657
50	4	8	5	4	65	2	52	19	82	30	133	66	300	3	5	0	0	97	242	830	6852
47	4	15	20	6	65	1	36	28	86	26	121	83	252	3	6	0	2	98	210	828	6698
44	1	19	30	6	53	3	35	25	67	20	85	86	190	1	5	0	0	84	172	812	5238
29	1	7	22	4	51	1	44	14	68	8	73	56	196	1	4	0	1	46	150	380	5910
14	1	6	18	6	59	0	21	11	67	10	86	24	153	2	5	0	0	54	173	366	5893
10	0	8	4	8	67	3	30	8	61	3	78	29	210	1	1	20	0	43	189	281	4477
38	0	12	6	12	78	24	40	22	59	34	102	108	254	6	1	0	5	136	210	1402	4994
36	0	5	5	7	69	15	32	18	58	12	116	72	273	2	2	2	0	87	188	727	3629
31	1	3	8	7	84	12	46	17	51	13	168	67	270	2	3	0	6	77	207	687	4535
39	1	1	3	8	78	12	53	10	55	21	180	75	267	4	0	0	29	93	177	682	5956
56	0	2	4	12	82	8	30	33	59	43	169	93	224	5	2	39	16	130	213	1180	5501
74	0	4	3	9	71	8	36	35	50	37	113	134	208	6	2	0	10	132	243	1162	5593
0	0	1	8	15	102	17	66	62	102	60	123	160	345	2	4	35	27	147	281	1228	6080
2	0	4	15	7	106	20	65	56	99	63	128	176	333	7	3	15	28	157	284	1745	6779
8	0	8	21	11	87	7	40	85	83	57	129	164	238	5	4	0	3	174	236	1726	5441
0	0	18	9	13	83	25	30	106	69	93	109	212	196	6	3	9	0	215	197	2459	5896
6	0	34	6	14	74	22	34	80	74	110	128	248	205	11	7	1	0	199	199	2564	5936
2	2	14	11	8	111	28	41	64	86	83	154	208	209	8	4	0	51	156	253	1802	6706
3	1	24	5	13	104	30	46	54	86	68	152	241	249	6	1	7	23	145	268	1972	5688
0	5	3	9	20	88	29	26	48	105	70	153	204	205	7	2	0	5	163	283	1974	6211
2	1	6	7	17	80	23	41	120	109	93	177	248	255	8	1	7	0	178	278	1979	5845
9	2	2	9	18	103	17	45	115	89	105	170	269	283	10	1	1	22	209	239	1782	5081
5	1	3	6	5	105	18	59	26	80	41	291	194	296	8	2	0	14	154	283	1027	6057
1	0	2	6	4	84	12	70	31	0	43	206	182	612	3	8	0	1	157	329	998	5295
8	0	4	4	4	85	9	50	37	84	47	260	172	392	2	6	0	46	107	251	1037	5563
8	0	7	2	2	53	18	12	44	40	54	65	115	123	2	8	0	0	102	173	714	1978
5	0	1	4	3	56	9	11	39	37	42	58	84	113	2	2	16	0	72	148	749	2226
1	2	1	3	5	64	8	9	75	37	33	70	68	126	1	7	0	0	110	138	702	2674
4	0	14	1	3	76	8	9	67	40	40	94	97	136	3	4	0	0	101	164	648	2588
0	1	9	1	0	67	10	25	70	39	42	164	115	180	1	4	0	6	150	207	590	2939
1	1	6	3	1	69	0	29	63	33	65	122	182	171	2	6	0	0	130	227	912	2355
3	1	16	1	12	93	27	45	55	113	135	171	250	265	10	8	19	69	160	274	2775	3215
6	1	7	1	10	48	35	31	61	36	102	103	229	194	5	2	0	0	152	189	1836	2560
4	1	9	3	6	48	22	26	101	38	70	104	239	164	11	2	98	0	334	160	1926	2618
3	1	10	0	9	35	29	24	116	40	77	87	332	147	32	2	39	0	271	137	1862	2814
5	0	6	2	9	36	21	22	73	52	58	91	232	148	14	1	0	0	230	149	1365	2417
0	1	13	3	5	34	13	17	80	48	47	80	191	131	8	3	0	0	193	139	1347	2791
	3	13	4	4	39	17	21	72	58	53	68	168	126	5	4	0	20	196	141	1320	3249
5	1	12	2	12	24	21	11	67	41	55	510	185	85	3	3	19	0	148	93	1310	1818
3	1	8	6	4	18	11	11	22	46	43	63	109	109	9	5	0	0	90	98	705	1998
2	0	10	9	7	24	5	6	19	46	35	52	104	130	8	12	0	0	85	82	698	1975
	0	8	5	6	26	1	14	26	39	37	66	90	117	5	13	0	0	84	111	693	1987
2	0	4	1	10	20	3	12	20	45	37	79	77	113	2	11	0	0	64	101	682	2249
	1	5	2	7	40	0	26	21	55	42	121	61	153	0	5	0	0	59	186	645	1691
	0	4	1	6	41	4	16	27	48	36	71	49	89	0	1	1	0	60	140	670	1264
	0	3	1	7	37	6	12	12	41	32	68	57	71	2	5	0	0	30	141	661	1246
	1	0	2	3	57	0	0	4	53	1	139	12	230	1	9	0	0	10	204	29	1359
	1	0	3	0	48	0	0	1	50	2	98	14	202	0	5	0	1	1	143	29	1390
	1	0	1	0	36	0	10	2	66	1	86	6	134	0	4	0	9	6	140	29	2277
	2	1	3	0	45	0	12	2	69	1	67	4	158	1	3	0	0	6	167	29	2966
	1	0	18	0	37	0	36	3	91	2	129	6	352	0	3	0	0	6	202	29	3920
	0	1	12	1	40	0	37	1	67	2	122	4	288	0	8	0	0	6	152	29	3650
	0	3	6	0	39	0	55	1	70	3	116	11	331	0	5	0	0	6	186	28	3865
	0	0	12	0	67	0	131	1	30	3	201	6	607	0	2	0	14	5	357	28	3839
	0	0	10	0	51	0	95	2	8	3	228	7	535	1	10	0	0	4	256	26	4036
	0	0	7	0	33	0	69	1	82	2	189	4	337	0	5	0	0	2	238	25	4164
	0	6	5	8	33	8	54	11	68	16	160	116	294	7	84	0	2	66	207	764	4377
	1	10	1	13	36	13	56	18	56	20	154	82	285	2	10	0	0	79	183	770	4209
	0	14	3	12	34	7	38	31	61	32	90	90	249	6	14	0	0	109	166	769	4342
	0	16	2	12	37	9	32	57	49	41	94	136	251	4	18	0	0	126	164	766	4354
	0	15	1	9	46	10	35	66	55	35	101	122	239	5	13	0	0	121	174	782	4337
	1	1	4	2	55	10	34	14	70	17	88	112	207	9	15	0	0	59	199	921	4293
	0	6	2	5	64	7	32	19	72	24	117	113	287	2	6	0	0	76	185	914	5349
	0	10	4	10	49	6	16	44	53	36	63	134	156	4	4	0	0	81	139	925	3281
	0	9	3	4	45	9	24	35	49	25	71	114	164	3	7	0	0	55	138	483	2299
	1	10	3	8	46	14	38	26	58	20	91	106	193	2	5	4	0	47	151	480	3364
	0	4	4	2	69	7	27	24	68	21	86	71	234	1	6	0	0	37	179	479	4500

MONTHLY RETURNS.

PART V.

MYSORE DIVISION.

Mysor

		Remained.		*Entered.*		*Total.*		*Cholera Spasmodica.*		*Cholera.*		*Dysentery*		*Diarrhœa.*		*Fever.*	
		Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
1815	For January	430	690	422	520	852	1210	0	0	0	1	94	31	13	33	225	55
	,, February	407	344	396	555	803	899	0	0	0	2	50	25	3	15	277	43
	,, March	339	488	442	439	781	927	0	0	0	2	48	12	1	20	437	51
	,, April	346	430	456	378	802	808	0	0	0	0	46	10	1	9	496	46
	,, May	379	404	780	913	1159	1317	0	0	0	0	195	67	0	67	492	66
	,, June	465	570	500	890	965	1460	0	0	1	2	197	59	2	34	375	86
	,, July	422	573	611	817	1033	1390	0	0	1	1	159	50	3	28	446	75
	,, August	493	650	576	657	1069	1307	0	0	1	10	133	37	4	24	395	71
	,, September	409	605	479	615	888	1220	0	0	0	1	116	34	1	20	402	66
	,, October	372	630	164	740	536	1370	0	0	2	3	82	43	1	22	100	69
	,, November	269	632	144	760	413	1392	0	0	2	9	57	41	1	24	52	78
	,, December	131	598	195	469	326	1067	0	0	1	2	31	24	2	28	30	49
1816	For January	131	388	184	594	315	982	0	0	0	0	50	19	1	16	25	40
	,, February	134	347	179	453	313	800	0	0	0	0	40	33	1	9	18	29
	,, March	145	319	174	771	319	1090	0	0	0	2	39	38	0	9	27	48
	,, April	139	471	159	906	298	1377	0	0	0	3	43	25	0	21	34	77
	,, May	147	544	218	908	365	1452	0	0	2	3	62	50	13	32	56	91
	,, June	172	663	284	652	456	1315	0	0	2	3	111	65	5	25	63	84
	,, July	168	464	302	489	470	953	0	0	3	2	109	65	1	19	43	49
	,, August	184	414	275	439	459	853	0	0	3	0	107	47	0	0	44	36
	,, September	194	330	227	357	421	687	0	0	1	2	78	26	1	10	43	27
	,, October	127	256	186	463	313	719	0	0	1	0	65	21	3	8	34	33
	,, November	133	254	130	309	263	563	0	0	0	0	56	16	5	9	30	25
	,, December	142	210	80	404	222	614	0	0	0	4	44	28	0	17	25	22
1817	For January	131	231	111	321	242	552	0	0	0	0	47	26	3	16	32	19
	,, February	78	188	110	344	188	532	0	0	0	0	32	14	0	18	23	17
	,, March	105	223	162	579	267	802	0	0	0	0	61	21	1	27	31	40
	,, April	145	322	162	958	307	1280	0	0	1	6	68	21	1	32	35	89
	,, May	151	458	205	819	356	1277	0	0	1	2	85	34	7	34	26	78
	,, June	177	363	161	476	338	839	0	0	0	4	108	43	3	31	24	43
	,, July	161	288	121	342	282	630	0	0	1	5	76	34	3	20	18	26
	,, August	134	256	81	294	215	550	0	0	1	4	52	43	1	20	15	26
	,, September	83	215	144	318	227	533	0	0	0	3	49	26	0	11	23	21
	,, October	108	212	133	293	241	505	0	0	2	3	62	20	0	12	23	21
	,, November	109	179	117	283	226	462	0	0	1	1	63	21	1	8	30	17
	,, December	85	204	101	308	186	512	0	0	0	0	54	17	2	5	20	20
1818	For January	87	210	80	346	167	556	0	0	3	6	48	4	1	11	19	24
	,, February	73	194	90	321	163	515	0	0	1	5	54	7	0	9	21	29
	,, March	94	203	105	407	199	610	0	0	0	4	62	4	1	11	25	39
	,, April	111	261	102	424	213	685	0	0	0	4	68	5	1	9	31	41
	,, May	110	209	223	513	333	722	0	0	0	1	80	4	3	18	50	45
	,, June	151	271	151	350	302	621	0	0	1	1	78	12	0	24	38	30
	,, July	126	213	121	324	247	537	0	0	2	3	57	8	0	21	24	25
	,, August	89	180	82	287	171	467	0	0	0	0	53	19	0	3	21	17
	,, September	144	169	238	263	382	432	91	0	0	0	84	14	0	17	35	13
	,, October	126	153	231	239	357	392	41	4	0	0	81	14	0	6	43	12
	,, November	135	139	261	494	396	633	67	141	0	0	98	12	0	19	78	20
	,, December	170	244	215	423	385	667	20	37	0	0	85	11	2	12	89	31
1819	For January	165	260	176	473	341	733	9	11	0	0	67	18	2	11	58	37
	,, February	151	273	154	570	305	843	1	53	0	0	53	17	0	16	35	39
	,, March	165	318	175	866	340	1184	3	176	0	0	47	33	1	20	48	55
	,, April	153	379	232	512	385	891	1	30	0	0	69	12	0	11	67	53
	,, May	199	652	190	641	389	1299	4	64	0	0	81	5	0	29	58	79
	,, June	165	293	250	715	415	1008	8	13	0	0	71	16	0	41	66	51
	,, July	180	367	266	527	446	894	3	27	0	0	83	11	3	30	55	36
	,, August	192	299	280	457	472	756	11	8	0	0	79	13	3	17	57	27
	,, September	178	301	208	500	386	801	3	24	0	0	48	10	1	11	57	28
	,, October	153	314	215	510	368	824	2	21	0	0	44	6	1	10	84	30
	,, November	191	184	191	747	382	931	0	64	0	0	51	17	0	14	84	39
	,, December	172	316	199	1017	371	1333	0	232	0	0	52	20	0	11	75	44
1820	For January	167	415	187	614	354	1029	0	97	0	0	64	16	0	13	63	42
	,, February	210	317	271	632	481	949	17	49	0	0	95	11	4	11	72	40
	,, March	218	359	273	814	491	1173	3	36	0	0	87	9	0	11	66	58
	,, April	197	413	271	861	468	1274	2	16	0	0	71	16	2	10	53	66
	,, May	213	447	237	1061	450	1508	3	133	0	0	76	18	1	19	42	67
	,, June	160	605	202	1183	362	1788	3	292	0	0	57	23	0	39	42	64
	,, July	262	541	264	801	526	1342	2	140	0	0	96	23	0	32	55	43
	,, August	220	632	287	900	507	1532	3	28	0	0	113	45	0	41	49	59
	,, September	233	546	282	689	515	1235	2	8	0	0	94	20	0	20	60	43
	,, October	223	490	316	728	539	1218	3	5	0	0	95	19	0	11	75	40
	,, November	235	511	291	673	526	1184	5	7	0	0	70	25	19	19	100	4
	,, December	197	480	311	599	508	1079	5	13	0	0	94	18	0	13	74	3

Division.

Table V.

epatitis.		*Ophthalmia.*		*Rheumatism.*		*Ulcers.*		*Venereal.*		*Other diseases.*		*Cured.*		*Dead.*		*Transferred.*		*Remaining.*		*Strength.*	
	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
92	12	74	9	53	85	121	106	68	73	112	303	434	748	6	22	5	96	407	344	3112	10498
83	1	56	5	55	67	113	70	50	62	116	219	396	348	5	8	63	55	339	488	2079	7066
12	3	35	3	28	55	20	77	42	63	58	175	423	484	12	11	0	2	346	430	1309	6599
92	1	50	2	22	37	31	55	12	65	52	169	407	387	16	9	0	8	379	404	2025	6237
19	2	70	13	51	57	19	79	102	136	107	223	666	692	21	25	7	3	465	597	3791	12002
99	3	43	23	40	60	18	94	77	119	113	205	530	820	11	36	2	31	422	573	3772	11307
03	2	44	33	44	84	22	131	100	83	111	228	518	714	20	25	2	1	493	650	3709	11147
18	1	26	34	49	64	22	85	119	71	106	276	570	681	16	21	74	0	409	605	3666	10703
00	2	14	18	42	75	17	83	111	61	85	259	477	568	26	21	13	1	372	630	3977	10533
93	3	6	16	34	112	16	90	109	74	93	313	256	717	11	21	0	0	269	632	3089	12042
71	4	5	10	26	96	12	79	105	68	82	274	233	760	2	20	18	19	160	593	1943	10279
48	0	1	10	29	72	6	67	106	73	172	293	193	626	2	12	0	39	131	390	1688	9138
66	5	1	5	36	65	9	79	56	68	71	321	164	554	3	9	5	1	143	418	1592	9145
61	2	3	10	25	72	6	76	97	54	62	252	167	447	1	11	0	10	145	332	1574	9576
55	3	4	11	24	72	13	46	101	46	56	380	168	620	6	9	6	12	139	449	1706	9037
50	2	2	10	14	82	2	38	82	40	71	378	161	675	3	31	6	18	128	653	1212	8885
58	1	3	12	19	70	10	41	80	50	62	280	228	751	7	24	0	14	130	663	1357	7941
47	0	3	14	23	49	14	36	77	36	111	242	261	818	8	19	3	6	184	472	2463	8346
46	3	6	21	29	59	17	30	74	41	142	218	274	526	12	13	0	0	184	414	2412	8038
50	5	6	11	26	69	19	20	70	50	134	288	256	459	8	12	1	52	194	330	2618	8253
45	1	11	18	34	59	21	28	72	28	115	236	256	413	6	18	1	0	158	256	2572	8263
26	1	6	10	16	60	23	18	42	32	97	233	157	400	7	11	0	0	149	308	1638	8285
23	4	6	6	10	44	26	19	57	35	50	180	120	333	1	12	0	8	142	210	1456	7641
22	1	5	8	11	52	17	37	52	44	46	199	103	369	3	12	3	21	113	212	1235	7499
21	4	2	10	14	44	16	34	42	35	65	186	118	339	3	10	11	3	110	200	1539	6896
17	12	0	7	10	36	11	40	42	39	53	191	83	303	0	5	0	1	105	223	1262	6717
45	5	1	6	12	41	37	40	32	44	47	215	105	419	3	16	7	45	152	322	1446	7573
50	2	1	11	11	39	42	37	39	54	49	198	152	633	4	13	0	0	151	634	1564	7443
55	4	7	21	11	71	37	59	54	61	63	210	174	854	5	17	0	17	177	389	1889	7475
8	1	12	36	6	43	17	46	69	42	51	154	152	508	12	17	0	0	174	314	899	6452
0	3	14	34	6	38	11	56	65	38	48	134	142	347	6	13	0	2	134	268	874	6664
2	3	13	23	6	34	3	42	30	39	57	140	124	308	7	20	1	7	83	215	872	6034
4	3	13	11	6	37	27	41	14	48	51	135	104	308	6	13	9	0	108	212	1135	6009
4	2	8	6	6	31	36	40	7	46	53	129	127	294	5	13	0	19	109	179	1130	6218
7	1	3	3	3	38	21	36	10	53	55	126	116	239	5	6	1	5	104	212	1123	6064
9	1	3	1	2	38	22	57	9	45	45	140	90	294	2	7	3	0	91	211	1094	6277
0	3	2	2	3	43	16	53	15	46	40	147	90	356	4	5	0	1	73	194	787	5652
6.	0	3	0	2	32	9	37	18	54	29	143	64	303	5	5	0	0	94	207	853	6174
0	2	3	3	5	35	13	0	19	49	31	179	82	335	6	8	0	6	111	261	903	5656
0	3	5	2	8	47	18	45	11	37	31	120	104	462	5	14	1	0	103	209	892	5688
6	2	7	3	8	38	16	39	30	35	83	128	177	441	4	10	1	0	151	271	1384	5721
2	1	12	7	11	31	14	37	29	31	67	116	173	398	3	10	0	0	126	213	1327	5436
2	2	14	12	12	31	14	39	23	44	49	121	134	318	3	10	2	0	108	209	1543	5846
1	1	5	9	6	48	8	32	11	30	36	146	81	292	2	5	0	1	88	169	971	6189
4	4	15	5	9	49	13	33	46	35	45	144	195	271	40	8	21	0	126	153	1643	6084
1	5	10	5	13	40	17	30	65	35	56	131	205	247	7	5	10	1	135	139	1968	5882
3	1	9	6	8	50	11	32	68	37	34	130	214	297	12	91	0	1	170	244	1662	5950
4	0	6	4	6	46	15	42	58	38	60	159	210	380	10	20	0	7	165	260	1637	6257
1	0	9	5	7	49	18	45	63	42	57	182	184	438	6	22	0	0	151	273	1633	6531
3	1	9	7	12	68	17	39	68	56	57	193	134	503	5	22	0	0	166	318	1677	8402
5	0	5	7	8	84	31	39	68	56	64	215	184	639	3	60	0	36	153	449	1639	7315
4	1	5	5	13	57	27	27	48	49	81	161	177	562	9	12	0	0	199	317	1767	6981
1	1	6	9	14	71	27	71	36	63	102	195	221	801	3	30	0	1	165	467	1869	7829
3	0	14	18	16	59	19	49	38	61	120	235	230	622	5	17	0	0	180	369	2178	8150
1	2	17	21	21	73	38	63	48	58	127	241	241	555	13	22	0	3	192	314	2202	8412
4	3	10	30	23	68	42	64	40	61	153	219	281	431	3	19	10	4	178	302	2162	8180
5	0	10	13	12	72	31	91	33	66	126	228	224	447	5	17	4	7	1.53	330	1710	9784
0	0	8	7	7	73	29	110	34	49	99	245	168	539	9	15	0	0	191	270	1822	9164
7	0	4	6	7	83	26	60	59	58	94	231	198	572	3	40	0	13	181	306	1832	9303
1	1	7	6	6	91	26	80	62	73	92	379	199	707	4	115	1	78	167	433	1709	10269
1	0	4	5	3	73	29	51	48	66	82	288	179	673	2	33	0	6	173	317	1722	9783
5	4	10	7	8	61	44	48	45	66	111	285	245	549	17	41	0	0	219	359	2408	9593
8	2	11	8	16	58	49	63	37	85	134	322	289	720	5	38	0	2	197	413	2402	10548
3.	4	10	7	14	77	38	76	37	83	148	324	246	788	9	27	0	12	213	447	2343	11796
7	6	11	8	11	84	36	166	38	92	145	311	263	831	6	87	2	25	179	565	2307	12932
2	8	7	19	5	93	17	200	38	115	121	350	205	964	6	146	0	39	151	639	1576	14399
5	11	18	13	14	90	32	205	66	107	158	286	288	689	6	85	12	0	220	568	2283	12560
9	14	25	16	14	100	32	225	55	124	127	415	266	879	8	22	0	1	233	630	2279	14180
3	8	22	7	12	81	30	180	59	81	143	394	283	729	9	16	0	0	223	490	2296	11853
9	3	13	12	11	72	33	151	52	105	158	435	292	684	12	21	0	0	235	513	2395	11819
9	4	12	10	6	64	34	168	61	103	130	364	314	706	7	14	8	13	197	451	2502	11826
3	7	9	9	10	69	24	129	58	122	141	304	280	642	9	18	0	0	219	419	2383	12899

MONTHLY RETURNS.

PART VI.

CENTRE DIVISION.

Cent

		Remained.		Entered.		Total.		Spasmodic Cholera.		Cholera.		Dysentery		Diarrhœ.		Fever.	
		Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
1815	For January	149	85	136	93	285	178	0	0	1	0	27	4	1	3	30	5
	,, February	88	87	108	107	196	194	0	0	0	0	16	1	3	3	35	4
	,, March	92	81	90	114	182	195	0	0	0	0	31	4	0	2	29	5
	,, April	57	83	83	107	140	190	0	0	0	0	33	10	1	3	23	4
	,, May	56	96	329	207	385	303	0	0	0	0	93	25	8	3	37	7
	,, June	172	120	174	137	346	257	0	0	0	0	94	13	0	5	22	6
	,, July	158	115	234	117	392	232	0	0	0	0	90	16	1	2	25	4
	,, August	166	106	75	207	241	313	0	0	0	0	74	14	2	16	26	7
	,, September	109	135	125	202	234	337	0	0	0	0	86	13	1	5	23	7
	,, October	118	151	470	117	588	263	0	0	0	0	122	13	4	4	241	6
	,, November	277	198	235	113	512	316	0	0	1	1	91	10	4	4	183	10
	,, December	250	119	235	77	485	196	0	0	0	2	114	4	4	4	22	3
1816	For January	294	84	391	104	685	188	0	0	4	0	172	5	5	1	115	6
	,, February	191	116	274	105	465	221	0	0	5	0	133	5	14	4	83	4
	,, March	266	66	429	78	695	144	0	0	13	0	140	7	1	1	118	3
	,, April	160	104	232	141	392	245	0	0	3	0	85	3	1	4	75	5
	,, May	194	314	276	226	470	540	0	0	2	0	104	15	0	2	111	22
	,, June	206	203	241	186	447	389	0	0	7	0	100	10	1	1	78	15
	,, July	188	223	307	117	495	340	0	0	8	0	108	5	3	3	74	11
	,, August	235	236	307	120	542	356	0	0	3	0	131	11	4	7	60	117
	,, September	245	270	341	63	586	333	0	0	4	1	172	9	1	6	69	10
	,, October	228	136	379	190	607	326	0	0	0	0	165	9	1	5	69	11
	,, November	307	165	270	154	577	319	0	0	2	0	151	9	3	4	41	6
	,, December	303	148	303	213	606	361	0	0	2	0	168	15	4	1	65	9
1817	For January	280	230	258	186	538	416	0	0	0	1	166	12	0	7	70	9
	,, February	214	243	272	185	486	428	0	0	0	1	153	4	0	3	63	10
	,, March	217	211	285	161	502	372	0	0	0	1	130	5	3	1	79	84
	,, April	206	161	286	183	492	344	0	0	0	1	87	7	0	0	73	76
	,, May	228	135	304	140	532	275	0	0	0	0	108	4	1	1	80	77
	,, June	192	130	300	93	492	223	0	0	1	1	107	11	1	1	71	48
	,, July	195	148	364	171	559	319	0	0	0	1	160	13	0	10	58	59
	,, August	243	177	285	99	528	276	0	0	0	0	92	13	2	3	74	68
	,, September	167	127	267	165	434	292	0	0	0	0	69	9	1	3	59	91
	,, October	174	103	283	107	457	210	0	0	0	0	75	9	3	2	47	53
	,, November	225	125	173	160	398	285	0	0	0	0	68	9	5	1	28	66
	,, December	184	177	162	260	346	437	0	0	1	0	59	6	2	9	29	123
1818	For January	105	155	194	150	299	305	0	0	0	0	53	5	14	0	25	64
	,, February	121	103	131	135	252	238	0	0	6	1	39	4	10	2	20	48
	,, March	78	111	122	176	200	287	0	0	0	0	36	13	6	4	11	74
	,, April	144	63	152	144	296	207	0	0	1	0	40	6	0	0	25	37
	,, May	122	107	282	104	404	211	0	0	0	0	71	6	0	0	76	44
	,, June	141	117	204	102	345	219	0	0	0	0	70	8	0	0	75	52
	,, July	122	110	209	81	331	191	0	0	0	0	57	6	0	1	45	45
	,, August	157	153	258	226	415	379	0	0	0	10	55	15	0	7	41	76
	,, September	61	181	221	268	282	449	0	0	1	16	31	34	2	8	46	113
	,, October	160	174	328	374	488	548	99	120	0	0	46	46	3	11	68	132
	,, November	157	164	296	350	453	514	75	110	0	0	62	48	0	16	70	131
	,, December	163	202	295	349	458	551	37	49	0	0	86	62	5	21	71	122
1819	For January	170	188	207	391	377	579	18	23	0	0	65	37	2	19	49	136
	,, February	163	233	172	334	335	567	4	20	0	0	62	29	15	17	39	111
	,, March	89	219	247	403	336	622	2	16	0	0	50	50	18	11	60	176
	,, April	113	119	239	473	352	592	9	13	0	0	36	37	0	9	58	183
	,, May	158	207	250	484	408	691	22	113	0	0	53	33	13	14	64	171
	,, June	114	224	298	824	412	1048	61	159	0	0	50	60	17	27	83	306
	,, July	160	352	523	486	683	838	195	29	0	0	97	62	90	21	111	266
	,, August	182	260	415	912	597	1172	42	132	0	0	144	56	71	42	119	292
	,, September	168	478	353	531	521	1009	12	97	0	0	116	28	48	53	108	261
	,, October	187	301	387	331	574	632	35	17	0	0	96	17	41	9	123	199
	,, November	201	192	377	609	578	801	31	14	0	0	96	26	22	21	79	274
	,, December	156	294	210	606	366	900	5	31	0	0	81	18	1	31	31	267
1820	For January	153	312	192	713	345	1025	5	37	0	0	67	20	7	49	30	300
	,, February	68	239	43	516	111	755	1	15	0	0	13	16	0	36	9	234
	,, March	62	238	85	627	147	865	0	13	0	0	8	9	3	29	22	276
	,, April	66	252	58	627	124	879	3	1	0	0	16	15	0	20	15	228
	,, May	57	310	72	629	129	939	0	5	0	0	14	15	2	27	14	255
	,, June	64	338	68	525	132	863	0	5	0	0	16	22	2	40	8	220
	,, July	44	277	65	536	109	813	0	13	0	0	15	20	1	50	26	242
	,, August	41	226	69	550	110	776	1	8	0	0	25	28	4	46	13	193
	,, September	43	209	66	522	109	731	2	18	0	0	19	18	6	35	14	183
	,, October	56	214	55	339	111	553	0	15	0	0	20	20	4	19	6	130
	,, November	66	176	38	282	104	458	0	4	0	0	14	18	2	11	6	113
	,, December	58	216	36	337	94	553	0	1	0	0	12	12	3	21	2	111

Division. *Table VI.*

Hepatitis.		Opthalmia		Rheumatism.		Ulcers.		Venereal.		Other diseases.		Cured.		Dead.		Transferred.		Remaining.		Strength.	
Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
1	1	7	5	25	19	30	17	45	8	118	71	151	100	9	4	6	4	119	70	1468	3446
2	0	5	3	15	26	20	10	25	22	75	84	93	110	7	3	4	0	92	81	1019	3691
15	0	3	3	17	31	32	14	23	26	32	61	120	105	1	6	0	1	61	83	829	3789
11	2	1	5	9	30	10	13	14	23	38	58	82	92	2	2	0	0	56	96	860	3858
19	3	7	9	14	36	115	25	43	36	49	95	204	189	6	3	3	0	172	120	1585	5375
22	1	20	7	10	33	112	26	24	31	42	76	180	135	6	4	2	3	158	115	1403	4561
35	0	32	16	14	38	108	16	29	27	58	70	219	121	7	5	0	0	166	106	3068	4112
31	0	7	29	13	39	12	19	35	29	51	94	127	175	5	3	0	0	109	135	1202	4667
15	0	5	14	17	32	11	18	30	31	46	146	105	184	10	2	1	0	118	152	1329	4649
35	0	16	6	31	25	15	21	51	22	73	114	296	133	19	1	0	3	273	131	1971	3640
34	0	10	8	23	36	20	18	55	34	91	105	242	195	7	2	13	0	250	119	1868	3605
45	1	9	5	27	33	26	15	45	24	193	71	225	90	9	2	4	0	247	104	2276	3050
4	0	17	3	49	18	44	7	59	17	176	71	375	104	14	2	2	0	294	82	3384	3013
3	0	7	2	26	25	20	7	46	24	108	106	246	116	7	1	33	1	179	103	2507	2764
9	1	20	5	31	28	36	7	60	22	247	41	448	65	3	2	109	0	135	77	2231	2744
4	1	6	3	22	42	11	19	70	34	95	87	239	88	1	2	14	2	138	153	1863	3495
0	4	10	4	23	66	19	39	70	45	101	137	269	212	7	3	1	22	193	303	2383	4363
0	2	13	5	6	49	18	33	77	38	97	93	238	179	7	3	3	4	199	203	2445	4406
8	2	34	0	19	51	32	28	78	41	101	100	260	158	4	0	0	0	231	182	3246	4306
6	1	54	13	17	45	36	29	65	36	136	97	288	155	11	4	11	0	232	197	2672	4439
1	1	86	17	20	24	27	20	52	33	114	117	336	168	7	2	3	0	240	163	2353	4229
6	3	57	7	32	45	33	9	49	29	145	106	291	179	9	3	0	0	307	144	2301	4464
3	1	26	7	39	43	31	31	55	29	166	107	237	140	7	2	27	26	306	151	2431	4959
3	1	27	4	29	57	33	29	65	36	155	123	291	171	9	2	6	0	300	188	2446	5437
	3	19	2	24	66	21	49	64	49	131	135	300	182	7	12	20	22	211	200	2714	5979
	1	15	3	18	60	19	58	54	45	117	152	242	191	4	1	21	11	219	225	2331	6568
	3	22	3	16	29	22	40	73	37	107	169	274	199	6	3	16	0	206	170	2175	5040
	2	25	4	28	53	28	29	73	47	118	125	258	157	6	0	0	11	228	176	2263	3813
	1	30	3	29	34	30	20	70	38	127	97	337	134	11	2	2	14	182	125	1982	2695
	0	30	3	20	38	31	17	62	27	120	77	276	92	7	0	0	0	209	131	2920	3097
	3	53	13	22	51	34	18	59	38	117	205	322	145	12	3	0	0	225	171	2888	3364
	3	48	12	20	33	35	16	64	31	102	97	284	140	12	5	65	2	167	129	2210	3059
	2	40	14	18	24	22	18	48	34	115	94	244	170	9	2	0	0	181	120	2100	3055
	0	38	7	26	31	32	18	40	26	130	64	227	85	9	6	1	0	220	119	2445	2492
	1	18	2	22	40	34	19	37	31	130	116	204	133	9	5	1	13	184	134	1899	2936
	1	22	4	19	44	26	17	7	48	135	185	167	240	10	6	1	0	168	191	1802	4452
	0	6	2	22	27	41	15	20	43	84	149	156	164	5	2	20	0	118	139	1307	3562
	0	8	0	11	32	53	17	21	39	72	95	139	129	1	1	22	2	90	106	1298	2928
	0	6	2	10	37	33	22	17	36	70	99	111	156	1	6	9	0	79	125	1008	4063
	0	5	0	15	40	31	14	62	30	99	80	166	89	3	1	5	0	122	117	1683	2999
	0	5	1	17	40	48	6	49	31	110	83	244	98	16	2	0	0	144	111	1517	3043
	0	12	2	11	44	40	15	43	27	73	71	216	105	7	2	0	2	122	110	1583	3261
	0	43	7	12	38	43	14	39	18	71	62	182	89	9	3	0	0	140	99	1516	3487
	0	90	22	28	48	41	26	47	25	82	150	255	192	7	7	1	0	152	180	2168	4877
	1	21	21	21	38	18	19	26	30	80	169	126	266	4	3	9	5	143	175	852	5353
	1	28	14	24	41	26	13	36	22	125	148	260	342	23	36	46	0	159	170	1544	6131
	1	26	5	30	30	22	16	28	23	109	134	269	277	24	35	0	0	160	202	1284	5857
	0	16	3	27	34	14	24	47	17	124	219	270	344	14	16	0	3	174	188	1314	2100
	1	10	3	21	42	15	32	57	13	112	273	213	335	12	11	11	0	141	233	1184	5267
	1	5	5	37	55	21	35	50	15	75	279	165	342	9	6	40	0	121	219	1361	5751
	1	3	3	32	61	18	27	38	15	80	262	197	399	8	7	17	1	114	215	864	5661
	1	6	4	24	61	26	15	45	20	103	249	191	379	3	6	0	0	158	207	1547	6627
	2	4	2	28	48	38	18	47	28	109	262	273	449	10	18	14	0	111	224	1081	7131
	1	3	10	34	81	27	56	28	55	102	293	228	656	21	33	0	7	163	352	1056	7723
1	2	4	19	31	44	32	49	26	33	81	313	462	551	39	25	0	2	182	260	1481	7202
	0	37	30	30	74	34	85	25	69	94	392	412	695	18	38	0	33	167	406	1450	10539
1	1	50	23	35	72	27	66	25	60	83	348	313	665	21	17	0	26	187	301	1440	9162
3	1	46	14	37	64	47	42	31	32	86	237	347	421	26	12	0	7	201	192	991	5619
1	0	62	11	39	66	47	45	37	49	149	295	353	499	15	8	0	0	210	294	957	6571
2	2	61	10	27	65	29	41	24	40	86	395	203	569	8	19	0	0	155	312	172	7297
2	5	29	7	32	72	22	43	19	31	107	461	207	764	11	22	9	0	118	239	59	6329
1	4	4	4	16	67	4	31	7	28	42	320	42	501	5	16	0	0	64	238	128	6566
1	2	6	9	22	73	7	34	10	35	50	385	72	594	1	21	0	0	74	250	129	6499
1	2	4	12	23	71	7	51	11	29	29	450	66	563	1	6	0	0	57	310	64	6041
2	3	4	10	30	80	4	70	9	30	28	444	63	592	2	9	0	0	64	338	64	7453
1	5	3	12	28	63	7	51	14	57	38	388	57	584	2	2	0	0	73	277	73	6141
1	7	5	14	10	51	1	44	8	49	25	323	68	544	3	12	0	2	38	255	75	7290
2	6	7	15	11	68	1	49	7	38	18	325	63	510	3	11	0	1	44	254	75	8098
2	4	7	9	11	71	4	38	12	29	10	326	50	442	4	14	0	0	55	275	75	6160
2	0	11	7	11	65	5	32	13	23	18	242	43	334	3	19	8	0	57	200	75	5196
2	0	10	7	12	51	4	27	13	25	22	202	44	256	3	4	0	0	57	198	689	7475
2	1	9	10	14	72	5	35	15	39	14	251	22	293	3	10	1	4	68	246	468	8840

MONTHLY RETURNS.

PART VII.

PRESIDENCY DIVISION.

Presidenc

		Remained.		*Entered.*		*Total.*		*Spasmodic Cholera.*		*Cholera.*		*Dysentery*		*Diarrhœ.*		*Fever.*	
		Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
1815	For January	220	247	223	394	443	641	0	0	0	0	99	23	1	22	49	176
	,, February	194	162	194	199	388	361	0	0	0	0	81	11	1	12	42	67
	,, March	202	198	212	190	414	388	0	0	0	0	80	6	1	9	38	71
	,, April	172	188	223	152	395	340	0	0	0	0	60	3	3	9	45	57
	,, May	154	148	253	171	407	319	0	0	0	0	64	4	4	8	60	39
	,, June	201	191	263	267	464	458	0	0	0	0	75	15	4	7	58	86
	,, July	205	223	330	328	535	551	0	0	0	0	93	20	5	13	68	139
	,, August	165	257	243	294	408	551	0	0	0	0	87	27	4	11	59	144
	,, September	195	211	221	233	416	444	0	0	0	0	87	15	4	16	47	11
	,, October	249	222	318	354	567	576	0	0	0	0	133	11	20	21	54	21
	,, November	314	225	246	293	560	518	0	0	0	0	115	19	31	17	54	147
	,, December	309	218	291	274	600	492	0	0	0	0	129	22	18	15	70	135
1816	For January	323	197	206	268	529	465	0	0	0	0	110	16	8	13	66	133
	,, February	308	192	231	267	539	459	0	0	0	0	99	12	6	18	67	117
	,, March	330	169	229	294	559	463	0	0	0	0	102	12	6	10	68	11
	,, April	328	178	303	247	631	425	0	0	0	0	95	10	11	11	75	11
	,, May	389	163	289	263	678	426	0	0	0	0	103	0	19	12	80	9
	,, June	370	188	258	237	628	425	0	0	0	0	81	7	13	11	78	10
	,, July	356	192	260	216	616	408	0	0	0	0	70	8	14	5	69	9
	,, August	370	168	302	204	672	372	0	0	0	0	121	4	15	19	62	7
	,, September	340	150	244	189	584	339	0	0	0	0	103	4	13	7	57	7
	,, October	326	126	258	214	584	340	0	0	0	0	100	6	13	12	56	7
	,, November	326	159	210	219	536	378	0	0	0	0	98	5	14	6	32	9
	,, December	332	112	222	236	554	348	0	0	0	0	104	10	14	6	45	8
1817	For January	316	152	240	216	556	368	0	0	0	0	103	4	14	8	37	9
	,, February	343	163	267	193	610	356	0	0	0	0	94	1	14	11	46	8
	,, March	346	140	219	231	565	371	0	0	0	0	93	5	11	11	40	6
	,, April	323	131	223	194	546	325	0	0	0	0	75	8	13	5	41	6
	,, May	279	138	170	175	449	313	0	0	0	0	51	9	8	4	32	7
	,, June	234	127	153	190	387	317	0	0	0	0	41	6	10	11	26	7
	,, July	206	143	288	226	494	369	0	0	0	0	71	3	9	15	47	8
	,, August	247	144	208	218	455	362	0	0	0	0	59	6	11	10	34	9
	,, September	248	178	179	214	427	392	0	0	0	0	56	8	11	9	42	10
	,, October	244	141	195	167	439	308	0	0	0	0	76	8	13	10	37	6
	,, November	244	109	175	167	419	276	0	0	0	0	91	4	10	4	32	6
	,, December	249	153	163	237	412	390	0	0	0	0	87	9	11	6	30	9
1818	For January	219	149	163	247	382	396	0	0	0	0	65	9	8	9	43	9
	,, February	219	151	139	215	358	366	0	0	0	0	59	5	13	9	29	10
	,, March	200	143	165	174	365	317	0	0	0	0	83	11	15	8	37	6
	,, April	204	90	178	198	382	288	0	0	0	0	83	6	14	4	47	8
	,, May	212	97	129	150	341	247	0	0	0	0	49	3	13	3	36	5
	,, June	197	80	131	147	328	227	0	0	0	0	38	10	19	6	26	3
	,, July	217	106	204	138	421	244	0	0	0	0	74	12	17	3	38	5
	,, August	270	99	235	130	505	229	0	0	2	0	134	11	22	8	51	4
	,, September	381	109	318	141	699	250	0	0	3	0	175	10	25	13	81	4
	,, October	309	93	359	264	668	357	30	76	0	0	174	6	31	24	87	8
	,, November	270	111	198	183	468	294	4	9	0	0	133	7	27	13	48	10
	,, December	256	111	189	188	445	299	2	4	0	0	110	9	29	23	68	7
1819	For January	246	108	258	237	504	345	2	12	0	0	125	9	26	16	69	10
	,, February	308	121	251	212	559	333	4	1	0	0	129	14	26	13	106	7
	,, March	248	115	367	281	615	396	13	3	0	0	141	9	24	16	96	7
	,, April	264	181	206	246	470	427	0	0	0	0	91	17	24	12	72	7
	,, May	280	183	279	284	559	467	7	14	0	0	114	10	31	24	112	9
	,, June	296	176	274	284	570	460	19	35	0	0	112	13	24	26	125	11
	,, July	344	152	269	246	613	398	16	23	0	0	136	11	20	23	106	9
	,, August	314	189	377	285	691	474	35	14	0	0	167	11	33	23	105	11
	,, September	311	182	282	239	593	421	5	19	0	0	159	12	39	26	101	9
	,, October	366	171	282	330	648	501	0	3	0	0	160	15	63	40	103	13
	,, November	373	151	222	308	595	459	1	3	0	0	134	10	40	22	101	10
	,, December	344	182	225	356	569	538	1	12	0	0	121	13	41	20	97	13
1820	For January	304	190	236	397	540	587	1	10	0	0	120	12	34	36	92	15
	,, February	317	193	236	350	553	543	8	20	0	0	111	13	29	35	84	13
	,, March	287	208	285	355	572	563	5	12	0	0	107	23	21	21	88	
	,, April	329	205	248	419	577	624	4	11	0	0	94	19	22	28	97	12
	,, May	325	235	275	502	600	737	11	44	0	0	114	23	17	40	117	14
	,, June	322	225	416	399	738	624	15	18	0	0	123	33	16	28	174	14
	,, July	275	228	375	344	650	572	9	3	0	0	181	29	26	16	108	17
	,, August	350	214	354	315	704	529	8	3	0	0	213	21	23	14	140	13
	,, September	354	227	285	285	639	512	5	0	0	0	154	16	24	13	105	13
	,, October	357	214	266	375	623	589	4	34	0	0	143	20	35	24	94	15
	,, November	330	246	268	425	598	671	3	27	0	0	141	20	42	23	83	18
	,, December	313	271	239	410	552	681	2	14	0	0	133	30	24	22	83	18

Division. *Table VII.*

Hepatitis.		Ophthalmia.		Rheumatism.		Ulcers.		Venereal.		Other diseases.		Cured.		Dead.		Transferred.		Remaining.		Strength.	
Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
76	1	8	13	26	85	14	34	69	67	101	220	229	383	8	7	3	0	203	251	1685	6702
58	4	6	3	29	65	14	18	60	50	97	131	179	161	6	2	1	0	202	198	1205	4442
64	6	3	5	34	65	15	12	78	60	101	154	216	195	12	4	16	0	170	189	1167	4494
46	4	7	4	28	49	89	55	14	12	103	147	231	186	6	4	1	0	157	150	1158	4611
36	2	7	5	28	25	19	17	96	75	93	144	204	143	8	1	0	0	195	175	1160	4692
44	2	7	7	32	71	25	22	96	100	123	148	244	203	7	1	1	12	212	242	1456	5953
49	1	15	9	31	64	31	27	93	99	150	179	259	288	8	3	0	0	268	260	1796	5467
36	1	44	21	23	75	28	40	37	90	90	141	175	281	18	8	13	1	202	261	1432	5888
46	1	62	13	16	58	34	23	33	72	87	130	160	220	7	2	0	0	249	222	1339	4575
59	3	83	23	25	51	33	26	52	85	108	146	239	345	11	4	0	0	317	227	1520	5545
58	1	85	8	28	66	32	25	71	76	86	159	233	293	16	5	0	0	311	220	1531	5746
75	1	76	9	35	43	27	29	71	65	99	173	255	295	13	3	7	0	325	194	1523	5778
74	1	51	2	38	41	26	23	64	67	92	169	201	264	18	3	1	4	309	194	1516	5712
65	2	46	4	37	52	28	17	66	63	125	174	193	253	8	5	0	0	339	201	1513	5697
60	1	46	6	36	44	14	21	67	35	160	218	213	282	9	7	5	0	332	174	1163	4705
61	1	51	8	46	49	29	24	56	41	207	169	231	256	5	6	6	0	389	163	1343	4730
64	1	58	6	57	54	41	20	66	50	190	193	264	229	5	9	39	0	370	188	1688	4737
72	1	59	5	47	46	36	22	86	55	156	178	266	225	6	8	0	0	356	192	1679	4830
73	1	50	5	39	37	60	31	85	84	156	138	240	230	6	10	0	0	370	168	1910	4919
72	1	60	7	32	38	72	25	84	99	154	106	320	220	11	2	1	0	340	150	1823	4930
69	3	68	10	33	38	51	18	65	69	125	120	245	206	11	7	2	0	326	126	1816	4920
81	1	65	13	42	29	42	17	51	58	134	131	242	196	16	3	0	0	326	141	1940	4900
80	1	65	8	44	53	30	17	60	49	113	149	193	207	11	7	0	15	332	149	1835	5881
77	1	59	3	39	54	29	17	66	27	121	146	260	190	8	6	0	0	286	152	1849	4907
88	1	57	5	45	48	25	20	70	29	117	156	182	202	19	3	2	0	353	163	1720	5013
91	1	51	7	41	50	20	27	101	33	152	146	217	213	8	3	1	0	384	140	1885	4960
83	1	38	9	35	54	26	35	79	41	160	148	234	235	8	2	0	0	323	134	1369	5015
88	2	39	6	36	42	32	29	76	36	146	128	248	183	8	4	11	0	279	138	1438	2820
76	2	30	3	30	37	23	25	58	44	141	116	208	181	6	5	1	0	234	127	1359	4989
55	1	34	2	31	45	23	23	54	34	113	125	168	171	6	3	4	0	209	143	1316	5051
57	2	46	16	40	44	21	37	65	50	138	122	233	195	6	0	8	0	247	174	1402	5126
53	2	51	39	45	36	21	30	76	38	105	103	193	211	10	6	1	0	251	145	1354	4092
52	2	44	35	44	45	13	34	70	42	95	111	174	248	9	3	0	0	244	141	1360	5356
49	2	48	12	51	47	13	25	52	36	100	100	182	158	13	10	0	0	244	140	1343	5347
44	1	27	9	48	42	15	24	45	24	107	105	163	118	7	5	0	0	249	153	1348	5452
40	0	30	6	48	53	21	31	31	39	114	151	180	233	12	8	1	0	219	149	1289	5352
42	0	31	3	43	44	21	28	35	35	94	172	153	238	10	6	0	0	219	152	1313	5315
42	0	32	4	48	43	23	27	28	35	84	143	150	216	7	8	0	0	201	142	1019	5296
42	0	13	3	41	49	20	23	32	34	82	126	156	171	5	3	0	11	204	132	995	5212
50	0	11	0	37	41	19	19	39	22	82	107	169	178	1	13	0	0	212	97	994	4204
44	0	8	1	39	36	21	22	37	20	94	110	140	165	4	2	0	0	197	80	876	4083
41	1	8	4	39	37	25	19	43	27	89	89	109	114	2	7	0	0	217	106	1116	4068
53	0	17	4	53	42	28	14	47	36	94	81	150	142	1	3	0	0	270	99	1243	2845
58	1	25	13	57	40	32	16	39	33	85	67	202	116	15	3	1	0	287	110	1283	4066
66	0	63	16	64	46	44	9	53	31	125	79	325	149	20	7	29	1	325	93	2297	4161
57	0	49	8	67	44	30	10	45	25	98	75	277	217	35	29	18	0	338	111	1973	4129
30	0	34	2	43	30	26	16	55	29	68	85	190	177	11	6	0	0	267	111	1178	4147
32	0	30	0	36	32	25	17	68	34	45	103	192	177	7	14	0	0	246	108	1179	4172
44	0	26	2	50	41	23	18	59	24	80	116	194	215	9	9	8	0	293	121	1141	4165
48	0	28	0	39	39	22	19	57	30	100	138	281	211	11	7	0	0	267	115	1547	4113
61	0	42	0	38	42	25	20	70	32	105	196	305	211	10	4	25	0	275	181	1286	4173
53	1	32	0	39	50	20	22	52	38	87	213	174	240	15	4	1	0	280	183	1130	4101
45	1	33	2	47	46	20	30	52	35	98	209	235	280	16	11	2	0	306	176	1163	2939
41	0	28	4	42	44	14	25	45	22	120	178	207	291	19	12	0	3	344	154	1223	4136
48	0	35	10	39	48	23	27	48	21	142	144	287	203	7	16	0	0	319	179	1234	4576
51	2	34	13	37	57	32	31	55	35	142	169	359	277	21	15	1	0	310	182	1370	5173
46	1	24	8	40	49	17	21	53	28	109	159	209	254	15	16	0	0	369	151	1482	4420
54	1	20	10	40	58	20	34	70	47	118	161	262	312	12	8	0	0	374	181	1470	6600
0	0	20	11	41	63	15	30	75	42	168	169	235	266	18	8	0	2	342	183	1455	6340
62	2	20	6	37	59	12	50	75	44	103	196	255	333	9	13	0	0	305	192	1457	6644
58	2	15	5	35	51	11	50	58	56	116	214	217	385	5	8	0	0	318	194	1406	6919
62	1	11	3	42	46	12	24	56	40	138	225	260	328	6	7	0	0	287	208	1208	6604
53	2	11	4	50	125	17	31	73	46	147	299	232	346	11	12	0	0	329	205	1403	5351
57	3	12	7	52	50	24	26	87	56	128	303	248	379	4	10	0	0	325	235	1126	6427
64	2	8	12	43	65	23	50	72	58	126	297	260	436	9	36	11	0	320	265	1118	7644
65	2	7	7	53	68	35	37	76	49	174	240	409	384	10	12	29	0	290	228	2155	6557
69	3	7	6	41	72	31	27	37	43	141	201	278	349	16	9	6	0	350	214	1192	5233
74	2	5	5	32	68	25	30	43	42	141	214	335	284	13	17	2	1	354	227	1372	6509
64	2	7	6	29	53	30	28	57	40	164	218	276	295	4	3	2	0	357	214	1454	6473
68	2	9	2	26	46	26	46	56	66	162	196	279	320	13	21	1	0	330	248	1402	6530
67	2	10	4	24	52	21	30	55	61	152	268	272	379	11	15	2	0	313	277	677	7672
74	3	8	2	25	76	22	28	33	46	148	274	247	413	10	8	3	0	292	260	1438	8595

MONTHLY RETURNS.

PART VIII.

SOUTHERN DIVISION.

Southern

		Remained.		Entered.		Total.		Spasmodic Cholera.		Cholera.		Dysentery		Diarrhœ.		Fever.	
		Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
1815	For January	87	185	103	183	190	368	0	0	0	0	27	13	4	5	20	94
	,, February	38	108	125	141	163	249	0	0	1	1	26	11	6	6	14	55
	,, March	51	120	93	261	144	381	0	0	1	0	16	12	8	2	19	135
	,, April	58	167	94	234	152	401	0	0	1	0	14	11	9	7	21	120
	,, May	68	183	163	250	231	433	0	0	0	0	37	15	22	9	20	102
	,, June	60	179	93	238	153	417	0	0	0	0	14	19	10	5	8	88
	,, July	45	173	70	215	115	388	0	0	0	1	12	21	7	10	3	70
	,, August	37	176	87	199	124	375	0	0	0	0	15	15	3	11	1	65
	,, September	45	173	68	189	113	362	0	0	0	0	12	9	9	9	3	75
	,, October	57	156	61	176	118	332	0	0	0	0	12	9	10	10	5	66
	,, November	67	151	82	220	149	371	0	0	3	7	17	22	7	12	10	107
	,, December	60	301	97	295	157	596	0	0	0	0	9	16	11	11	17	306
1816	For January	42	286	101	282	143	568	0	0	0	0	11	9	10	10	23	276
	,, February	40	276	68	235	108	511	0	0	0	0	5	7	7	4	11	235
	,, March	41	217	69	253	110	470	0	0	0	0	8	11	3	11	12	174
	,, April	28	226	84	275	112	501	0	0	0	0	6	12	4	12	18	165
	,, May	34	251	92	287	126	538	0	0	0	0	15	12	2	10	17	180
	,, June	36	244	201	228	237	472	0	0	0	0	38	11	1	15	15	127
	,, July	48	200	177	214	225	414	0	0	0	4	51	10	2	17	18	110
	,, August	47	179	141	248	188	427	0	0	0	0	30	9	2	5	24	15
	,, September	8	192	9	196	17	388	0	0	0	2	0	6	5	7	0	14
	,, October	6	163	16	191	22	354	0	0	0	1	0	9	3	5	2	11
	,, November	115	139	110	154	225	293	0	0	0	0	52	0	12	2	17	8
	,, December	84	178	204	332	288	510	0	0	0	0	60	12	15	8	43	12
1817	For January	84	262	176	260	260	522	0	0	3	0	59	13	5	8	27	11
	,, February	103	229	177	218	280	447	0	0	8	0	88	9	4	5	21	9
	,, March	133	234	229	246	362	480	0	0	0	1	92	10	10	11	27	11
	,, April	163	247	242	239	405	486	0	0	10	5	103	15	9	10	44	11
	,, May	157	239	227	224	384	463	0	0	11	1	104	15	6	10	42	11
	,, June	156	233	191	205	347	438	0	0	5	0	102	11	9	13	27	8
	,, July	141	255	170	187	311	442	0	0	5	0	71	18	5	10	29	7
	,, August	141	208	161	182	302	390	0	0	10	0	63	15	4	4	13	7
	,, September	154	169	157	218	311	387	0	0	7	2	61	31	6	14	15	8
	,, October	100	156	178	237	278	393	0	0	3	1	61	15	16	25	11	8
	,, November	102	214	164	187	266	401	0	0	2	1	56	25	12	14	18	10
	,, December	118	179	139	195	257	374	0	0	7	0	52	13	13	19	41	8
1818	For January	105	179	198	217	303	396	0	0	4	0	53	21	9	9	62	7
	,, February	151	174	179	173	330	347	0	0	2	1	77	17	8	6	52	8
	,, March	155	167	204	204	359	371	0	0	0	0	86	18	5	5	50	9
	,, April	153	150	183	190	336	340	0	0	5	0	77	9	4	6	42	9
	,, May	176	140	186	152	362	292	0	0	5	0	91	6	5	8	48	8
	,, June	172	132	166	121	338	253	0	0	6	0	81	5	5	5	37	5
	,, July	152	147	210	108	362	255	0	0	4	0	105	8	3	6	47	5
	,, August	170	139	248	120	418	259	0	0	4	0	95	11	7	14	73	5
	,, September	208	143	263	128	471	271	0	0	3	0	106	7	11	92	92	6
	,, October	210	136	231	156	444	292	0	0	4	2	103	14	8	11	131	7
	,, November	173	114	374	287	547	401	124	144	0	0	73	8	11	13	177	7
	,, December	178	165	279	381	457	546	94	113	0	0	52	10	8	12	165	14
1819	For January	126	177	182	199	308	376	12	59	0	0	47	5	3	14	107	6
	,, February	126	349	122	264	248	613	5	59	0	0	43	20	3	24	64	13
	,, March	113	241	186	294	299	535	2	11	0	0	63	8	2	18	74	23
	,, April	123	256	181	256	304	512	1	16	0	0	65	2	6	27	69	20
	,, May	149	182	186	304	335	486	3	23	0	0	71	16	1	29	80	17
	,, June	137	242	151	348	288	590	4	16	0	0	60	24	2	28	63	20
	,, July	117	248	190	343	307	591	3	71	0	0	68	29	1	21	61	16
	,, August	131	253	216	400	347	653	0	29	0	0	66	12	4	26	62	25
	,, September	154	257	188	370	342	627	0	30	0	0	84	17	3	27	53	22
	,, October	170	267	154	510	324	777	0	21	0	0	79	26	1	58	52	28
	,, November	125	297	165	665	290	962	0	47	0	0	63	33	3	40	54	35
	,, December	184	372	267	682	451	1054	22	141	0	0	95	34	27	21	102	44
1820	For January	50	290	115	526	165	816	8	80	0	0	35	22	23	26	18	25
	,, February	48	477	113	679	161	1156	3	106	0	0	29	27	11	85	24	32
	,, March	51	415	143	901	194	1316	3	33	0	0	26	33	15	44	31	47
	,, April	80	471	88	697	168	1168	0	46	0	0	24	36	8	36	28	45
	,, May	59	477	119	622	178	1099	2	11	0	0	12	28	4	35	44	39
	,, June	89	421	98	556	187	977	1	10	0	0	24	37	4	26	40	32
	,, July	61	448	109	563	170	1011	1	27	0	0	19	41	8	23	31	26
	,, August	82	383	110	589	192	972	0	44	0	0	18	33	6	17	37	23
	,, September	74	511	97	736	171	1247	0	32	0	0	19	61	6	30	32	40
	,, October	88	484	153	643	241	1127	1	23	0	0	40	42	11	33	46	33
	,, November	93	460	141	764	234	1224	8	35	0	0	28	28	10	45	49	35
	,, December	95	538	132	745	227	1283	3	28	0	0	20	36	8	31	60	34

ivision.

Table VIII.

epatitis.		Ophthalmia.		Rheumatism.		Ulcers.		Venereal.		Other diseases.		Cured.		Dead.		Transferred.		Remaining.		Strength.	
uropeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
29	2	1	9	5	75	17	32	56	50	32	88	100	203	1	5	0	1	89	159	1370	7085
34	0	0	3	4	40	6	20	36	42	36	74	103	125	2	4	7	0	51	129	550	5206
26	0	0	7	7	40	8	20	25	59	34	106	84	211	2	5	0	0	58	165	538	5100
27	0	0	5	6	54	30	60	7	36	37	108	95	211	3	7	0	0	54	183	542	6426
37	0	1	10	5	60	8	49	35	76	66	112	151	237	5	5	2	0	73	191	768	6492
31	2	2	12	4	55	6	42	26	88	52	102	78	227	3	9	27	0	45	181	760	6302
22	3	1	22	4	62	2	34	28	85	36	80	74	203	4	4	0	0	37	181	667	5535
17	3	0	28	4	70	8	31	37	72	39	80	77	213	2	5	0	0	45	157	667	6533
15	3	1	16	1	62	7	35	36	46	29	107	53	196	3	10	0	0	57	156	660	6357
11	1	0	16	1	56	6	46	56	53	13	75	50	174	1	5	0	2	67	151	657	6650
9	2	8	15	1	59	7	40	66	49	22	58	87	194	2	11	0	0	60	166	667	6602
4	0	5	5	1	62	9	35	41	53	60	108	114	293	1	14	0	0	42	289	662	7516
10	4	2	6	11	57	7	49	22	46	47	121	101	255	2	10	0	4	40	299	626	7442
10	2	2	0	9	46	4	39	20	40	40	138	67	285	0	8	0	0	41	218	629	6342
14	2	0	3	10	49	5	33	20	45	38	142	82	254	0	8	0	1	28	207	627	6640
10	3	1	4	7	58	2	38	8	51	56	138	75	243	2	8	0	0	35	250	629	6707
9	2	3	7	6	60	1	56	6	63	67	148	87	287	3	7	0	0	36	244	875	6630
12	1	3	5	5	59	12	60	15	59	136	135	185	257	4	5	0	0	48	210	876	6797
8	0	6	7	8	46	16	56	17	58	99	106	170	214	8	13	0	0	47	187	914	6826
4	2	7	11	15	43	6	46	12	58	88	100	139	220	3	4	3	2	43	201	910	6708
0	0	1	10	1	37	2	33	4	49	4	95	11	218	0	8	0	0	6	162	114	7105
0	1	0	12	2	48	0	25	4	43	20	102	14	185	0	8	0	0	8	161	115	7240
5	0	13	6	12	43	3	32	25	28	76	97	135	150	1	9	2	0	87	134	1537	6172
7	0	9	4	13	63	8	67	27	70	86	163	164	214	8	8	1	0	115	288	4494	7194
3	1	4	4	14	75	9	58	37	56	79	195	151	277	6	10	0	0	103	235	1173	6234
6	0	5	4	16	81	14	60	32	45	66	145	137	212	10	6	0	0	133	229	1185	6209
7	0	8	3	21	72	19	69	45	46	103	156	192	228	7	6	0	0	163	246	1120	5360
1	1	6	7	27	89	14	71	70	49	81	125	240	232	8	8	0	0	157	246	1129	5513
1	1	5	7	22	77	7	106	70	46	76	90	222	223	6	8	0	0	156	232	1209	5632
1	0	8	10	22	69	7	120	60	36	76	96	201	179	5	7	0	0	141	252	893	6010
3	1	3	20	19	65	7	126	63	39	76	93	166	223	4	6	0	0	141	213	891	5970
5	1	4	10	16	63	9	93	75	31	83	98	144	215	4	6	0	0	154	169	894	6182
1	0	9	24	19	55	12	66	89	24	72	87	178	186	7	9	0	1	126	191	827	5952
5	0	10	16	18	68	8	60	63	23	63	104	171	159	5	11	0	2	102	221	819	6093
4	0	21	8	14	63	7	56	52	23	60	99	147	219	1	3	0	0	118	179	819	5416
0	0	11	4	13	68	6	51	52	29	42	120	149	191	3	4	0	0	105	179	818	5053
5	0	10	4	20	71	12	59	55	30	53	128	148	217	4	5	0	0	151	174	1078	5086
2	0	12	1	20	50	20	66	64	25	53	98	173	174	2	5	0	0	155	168	1071	4895
9	0	16	4	23	51	17	60	73	27	60	115	202	216	4	5	0	0	153	150	1063	4694
3	0	16	5	31	42	7	57	81	28	59	102	159	195	1	5	0	0	176	140	1064	4779
0	0	16	4	30	40	7	44	89	27	54	82	185	152	5	4	0	0	172	136	1072	4987
2	0	19	11	20	33	13	45	69	27	66	76	185	108	1	5	0	0	152	140	1072	4736
4	0	29	13	18	30	13	40	58	28	56	79	186	113	6	3	0	0	170	139	1088	4870
7	0	46	14	25	34	18	31	59	32	54	73	209	108	1	8	0	1	208	142	1084	4854
5	1	55	13	29	41	21	38	74	32	55	70	227	134	3	1	31	0	210	136	1033	4541
9	1	35	11	18	50	13	40	64	28	49	64	267	146	4	6	0	0	173	140	1023	4617
3	0	16	8	14	42	10	32	52	24	57	58	332	181	37	64	0	0	178	156	1284	5857
7	0	7	7	16	57	6	82	31	32	73	93	320	280	11	45	0	0	126	221	971	4709
0	0	10	2	16	50	9	66	41	22	53	90	172	188	10	37	0	0	126	151	959	3733
0	0	13	6	21	91	8	124	28	30	53	122	131	363	4	37	0	7	113	206	953	4574
3	0	15	3	25	46	12	92	25	33	68	87	171	272	5	20	0	0	123	243	947	4104
4	0	18	2	24	53	7	88	34	32	66	85	155	270	0	14	0	0	149	228	950	5001
4	1	17	2	30	31	11	89	36	29	72	90	196	272	2	20	0	0	137	194	944	3908
2	0	23	11	28	60	12	94	25	56	59	100	163	341	8	12	0	0	117	237	836	5655
4	1	45	14	20	61	12	88	33	51	50	90	168	312	8	26	0	0	131	253	924	6277
9	0	57	12	16	77	13	73	66	45	54	130	190	389	3	7	0	0	154	257	916	6457
7	0	31	17	18	72	13	69	62	42	61	130	161	366	11	14	0	0	170	247	862	6688
1	0	26	20	13	74	10	74	53	45	69	177	194	466	5	14	0	0	125	297	853	6840
3	0	13	18	12	96	11	76	38	52	63	246	160	559	3	31	0	0	127	372	851	6904
5	0	6	9	17	88	26	70	44	45	77	200	304	637	17	53	8	1	122	363	1601	6963
5	0	2	7	8	70	12	77	14	40	40	243	110	497	7	35	0	1	48	283	834	6860
6	2	3	7	10	83	20	100	6	71	49	346	110	708	0	33	0	0	51	415	832	8512
1	0	2	6	10	80	25	164	27	64	44	415	111	786	3	15	0	0	80	515	825	8263
14	2	1	7	5	60	21	134	18	59	49	336	106	670	3	21	0	0	59	477	835	7245
20	1	2	6	12	59	11	161	14	56	57	346	87	664	2	14	0	0	89	421	836	7167
24	1	2	4	15	62	9	184	17	60	52	272	125	543	1	19	0	0	61	415	835	7244
20	0	3	10	14	64	4	231	21	90	49	258	86	608	2	20	0	0	82	383	831	8277
25	0	4	0	12	69	10	160	23	76	57	340	114	533	4	18	0	0	74	421	826	8321
17	0	7	22	9	88	7	160	25	85	49	367	81	743	2	20	0	0	88	484	834	8323
26	1	8	22	9	101	4	130	30	82	66	360	143	651	5	16	0	0	93	460	1008	9567
18	0	6	18	10	98	5	145	20	70	80	435	132	669	7	17	0	0	95	538	1001	9711
20	1	4	13	12	89	7	144	28	58	64	542	118	698	8	24	0	0	101	561	985	9550

MONTHLY RETURNS.

PART IX.

TRAVANCORE SUBSIDIARY FORCE.

Travancore Su

		Remained.		Entered.		Total.		Spasmodic Cholera.		Cholera.		Dysentery		Diarrhœ.		Fever.	
		Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
1815	For January	64	64	113	50	177	114	0	0	0	1	11	1	12	1	15	12
	,, February	79	57	73	48	152	105	0	0	0	1	21	1	0	0	14	14
	,, March	64	65	72	39	136	104	0	0	0	0	11	2	0	0	16	9
	,, April	64	50	90	38	154	88	6	0	0	0	4	2	11	0	14	1
	,, May	52	54	109	62	161	116	0	0	0	0	10	0	14	0	14	11
	,, June	85	72	95	50	180	122	0	0	0	1	13	0	17	4	17	9
	,, July	75	73	98	64	173	137	0	0	0	0	44	0	0	0	12	16
	,, August	68	73	105	72	173	145	0	0	0	0	38	3	0	4	21	18
	,, September	81	79	103	65	184	144	0	0	0	0	22	3	13	1	16	12
	,, October	99	73	106	60	205	133	0	0	0	0	19	1	3	1	11	10
	,, November	92	62	82	63	174	125	0	0	0	0	18	0	4	1	6	12
	,, December	73	52	69	71	142	123	0	0	0	0	17	1	8	0	14	10
1816	For January	49	62	85	49	134	111	0	0	1	0	29	0	4	2	18	10
	,, February	77	43	61	58	138	101	0	0	0	0	30	0	2	2	15	14
	,, March	40	37	65	91	105	128	0	0	0	0	21	0	0	1	5	46
	,, April	47	41	83	58	130	99	0	0	0	0	19	0	7	0	11	17
	,, May	68	39	77	66	145	105	0	0	0	0	10	2	7	1	10	24
	,, June	58	46	74	54	132	100	0	0	0	0	21	3	4	0	10	20
	,, July	73	45	75	33	148	78	0	0	0	0	33	2	6	0	10	15
	,, August	66	24	63	55	129	79	0	0	0	0	27	1	3	1	6	17
	,, September	63	28	67	39	130	67	0	0	0	0	22	3	5	1	13	6
	,, October	94	33	176	60	270	93	0	0	1	0	48	4	4	1	20	6
	,, November	55	44	104	47	159	91	0	0	6	0	25	2	0	0	4	10
	,, December	70	37	136	52	206	89	0	0	1	0	45	4	0	0	7	9
1817	For January	87	40	122	70	209	110	0	0	0	0	49	3	1	1	12	15
	,, February	90	58	122	41	212	99	0	0	0	0	49	4	0	1	11	11
	,, March	90	45	132	43	222	88	0	0	2	0	42	4	0	0	16	4
	,, April	108	32	145	55	253	87	0	0	2	0	33	1	0	2	14	11
	,, May	143	48	116	66	259	114	0	0	0	1	39	1	0	2	14	22
	,, June	104	58	104	59	208	117	0	0	0	1	54	0	1	4	13	23
	,, July	106	53	134	67	240	120	0	0	0	1	81	1	0	1	10	16
	,, August	122	52	176	58	298	110	0	0	5	0	88	2	2	1	12	15
	,, September	128	54	142	63	270	117	0	0	10	0	74	1	5	0	14	17
	,, October	106	55	158	72	264	127	0	0	7	0	45	1	4	1	9	20
	,, November	146	57	141	64	287	121	0	0	9	0	63	0	0	0	11	2
	,, December	123	61	146	86	269	147	0	0	13	1	61	0	0	1	10	2
1818	For January	112	67	100	58	212	125	0	0	16	0	47	1	1	1	1	21
	,, February	77	66	55	70	132	136	0	0	1	0	30	0	0	1	1	31
	,, March	61	59	61	40	122	99	0	0	0	0	20	0	1	0	3	13
	,, April	55	30	54	59	109	89	0	0	0	0	11	1	1	0	4	4
	,, May	64	44	40	80	104	124	0	0	0	2	9	4	0	3	4	1
	,, June	38	49	43	42	81	91	0	0	1	1	11	3	2	2	2	1
	,, July	31	41	50	30	81	71	0	0	1	0	18	2	2	0	2	7
	,, August	40	36	61	31	101	67	0	0	2	0	27	1	1	0	5	8
	,, September	43	30	62	45	105	75	0	0	1	1	22	0	0	0	0	1
	,, October	49	28	52	55	101	83	0	0	0	2	20	0	0	0	0	1
	,, November	31	76	46	170	77	246	0	0	2	21	14	17	0	0	2	4
	,, December	31	125	44	104	75	229	0	0	6	6	10	13	2	0	4	4
1819	For January	27	63	67	128	94	191	3	2	0	0	18	5	1	1	3	5
	,, February	34	105	56	106	90	211	0	6	0	0	10	5	0	2	5	5
	,, March	48	89	53	232	101	321	1	62	0	0	9	2	0	6	4	5
	,, April	36	106	70	168	106	274	2	12	0	0	11	3	0	2	3	96
	,, May	38	100	142	166	180	266	8	6	0	0	20	7	0	6	10	64
	,, June	66	98	136	147	202	245	6	3	0	0	28	4	3	1	14	5
	,, July	71	108	129	153	200	261	41	8	0	0	29	7	1	2	9	45
	,, August	64	117	117	133	181	250	16	3	0	0	33	2	1	1	6	41
	,, September	70	116	116	95	186	211	12	8	0	0	25	3	4	0	4	25
	,, October	62	94	107	105	169	199	10	18	0	0	18	4	3	3	3	14
	,, November	63	69	87	201	150	270	5	18	0	0	18	8	1	10	2	37
	,, December	50	124	91	111	141	235	3	8	0	0	13	3	1	1	3	20
1820	For January	53	100	76	140	129	240	1	4	0	0	7	2	1	2	3	2
	,, February	56	130	47	113	103	243	0	1	0	0	12	1	0	2	5	3
	,, March	43	109	72	84	115	193	2	0	0	0	11	1	0	2	9	2
	,, April	39	94	91	75	130	169	1	0	0	0	8	4	0	1	6	2
	,, May	53	70	97	109	150	179	2	0	0	0	10	1	0	1	5	14
	,, June	65	81	87	131	152	212	2	0	0	0	7	3	1	0	1	1
	,, July	69	94	77	102	146	196	2	1	0	0	9	2	2	1	4	11
	,, August	68	82	64	112	132	194	2	0	0	0	8	2	0	1	3	1
	,, September	49	95	77	113	126	208	1	0	0	0	7	2	0	3	5	14
	,, October	53	85	64	108	117	193	5	4	0	0	4	1	1	1	5	4
	,, November	41	82	104	125	145	207	8	4	0	0	10	0	5	1	6	12
	,, December	46	112	73	74	119	186	0	1	0	0	11	2	8	2	7	11

sidiary Force. Table IX.

Hepatitis.		Ophthalmia.		Rheumatism.		Ulcers.		Venereal.		Other diseases.		Cured.		Dead.		Transferred.		Remaining.		Strength.	
Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
20	0	5	2	12	20	29	15	36	21	37	41	99	45	1	2	0	0	77	67	893	3260
28	1	7	3	13	17	16	11	29	17	24	40	86	39	2	1	0	0	64	65	830	2149
20	0	18	2	14	21	18	9	19	23	20	38	72	48	0	4	0	0	64	52	830	1954
22	0	21	3	16	8	24	8	19	21	23	45	99	32	3	0	0	2	52	54	825	1886
19	1	26	5	14	31	18	18	19	19	27	31	73	44	3	0	0	0	85	72	821	2175
16	1	34	5	12	26	17	22	21	14	33	40	102	46	3	3	0	0	75	73	784	2231
16	0	26	4	11	24	13	28	22	24	29	41	99	61	6	3	0	0	68	73	776	2253
23	0	23	3	10	25	6	12	19	28	33	52	91	62	1	4	0	0	81	79	775	2264
37	0	20	1	11	28	5	9	25	26	35	64	81	67	4	4	0	0	99	73	772	2298
70	0	19	2	10	27	9	10	20	24	44	58	110	71	3	0	0	0	92	62	769	2297
53	0	24	2	12	19	8	11	10	26	39	54	98	70	3	2	0	1	73	52	752	2309
26	0	16	1	8	25	8	20	13	16	32	50	89	59	2	0	0	2	51	62	751	2313
34	0	7	0	7	20	0	12	9	12	25	55	55	64	2	2	0	0	77	45	749	2263
35	0	6	1	4	16	2	12	25	18	19	38	98	62	0	2	0	0	40	37	757	2238
20	1	2	3	2	12	1	14	31	15	23	36	55	87	3	0	0	0	47	41	754	2244
17	2	2	3	7	18	2	12	44	12	21	35	60	52	1	2	1	16	68	29	724	2243
22	1	11	1	6	9	6	17	49	12	24	38	84	52	1	2	2	5	58	46	744	2315
17	0	15	0	8	13	0	0	26	11	31	53	57	55	2	0	0	0	73	45	752	2329
23	0	18	2	8	12	9	16	19	10	22	21	82	49	0	3	0	1	66	25	741	2333
17	1	15	1	12	12	0	7	9	7	40	32	66	49	0	1	0	1	63	28	741	2365
18	1	9	2	8	9	7	8	14	2	34	35	65	30	2	3	0	1	63	33	738	2374
37	0	10	4	15	13	0	0	50	7	85	58	159	44	3	3	9	2	99	44	1717	2373
27	2	3	3	5	14	0	0	46	8	43	52	88	50	1	2	0	2	70	37	1036	2376
7	3	3	3	7	10	4	16	68	9	14	35	118	44	1	3	0	2	87	40	1031	2371
5	1	2	0	13	11	5	15	65	11	17	53	116	49	3	3	0	0	90	58	1026	2376
0	0	3	0	10	14	2	13	42	12	45	44	118	54	4	0	0	0	90	45	1020	2363
0	2	5	1	10	11	4	17	46	14	27	35	110	48	4	3	0	5	108	32	1014	2380
2	1	4	2	8	12	8	15	45	11	47	32	106	35	4	4	0	0	143	48	1028	2386
2	1	2	1	9	17	10	21	46	14	47	34	150	54	2	1	3	1	104	58	1036	2384
1	0	1	3	6	19	9	21	37	12	36	34	99	62	3	2	0	0	106	53	1033	2380
1	0	1	3	6	16	12	21	26	18	43	43	112	61	6	6	0	1	122	52	1178	2411
6	0	3	1	7	20	20	6	15	25	60	40	163	50	7	4	0	2	128	54	1171	2425
3	0	5	0	11	22	12	18	13	11	63	48	161	61	3	1	0	0	106	55	1166	2434
7	1	5	0	11	19	14	16	16	9	86	60	118	67	0	3	0	0	146	57	1162	2456
7	0	6	0	9	21	14	19	27	7	81	54	162	55	2	3	0	1	123	62	1160	2453
2	0	1	0	4	23	16	23	49	13	63	57	156	77	1	3	0	0	112	67	1156	2441
9	0	2	0	5	21	13	20	52	15	46	46	134	59	1	0	0	0	77	66	1148	2429
2	0	2	2	5	23	7	22	35	14	29	43	67	71	4	3	0	0	61	62	484	2370
9	0	2	4	2	17	4	16	18	14	43	35	66	63	1	1	0	2	55	33	466	2126
0	0	1	1	3	14	5	12	40	17	24	40	44	45	1	0	0	1	64	43	495	1861
0	0	1	1	6	17	4	15	37	21	23	46	60	75	6	0	0	0	38	49	487	1985
8	1	2	1	5	16	5	10	23	15	22	26	48	48	2	2	0	0	31	41	489	2060
4	1	4	1	6	14	3	8	15	13	16	25	40	33	1	2	0	0	40	36	486	2027
8	1	4	2	10	16	6	5	15	13	13	21	56	35	2	2	0	0	43	30	490	2051
2	0	6	2	6	18	3	9	17	11	28	18	52	46	4	1	0	0	49	28	489	2014
0	1	4	2	6	17	2	12	13	15	26	21	67	42	3	1	0	1	31	39	461	2080
7	1	2	2	6	25	3	57	10	25	21	52	46	74	0	5	0	41	31	126	461	2527
7	0	0	1	3	22	1	49	12	22	20	67	45	137	3	4	0	0	27	88	439	2551
9	0	0	1	4	17	0	30	18	23	28	62	59	83	2	4	0	0	33	104	476	2689
0	2	0	1	3	13	0	39	26	27	26	64	41	142	1	8	0	0	48	61	478	1970
8	3	0	2	6	27	0	61	28	35	35	71	62	171	2	26	1	15	36	109	476	2680
4	3	1	2	3	20	1	49	26	39	35	48	66	170	2	3	0	0	38	101	475	3068
1	1	4	2	6	24	4	53	24	44	73	59	110	166	4	4	0	0	66	96	959	3186
5	1	4	1	6	25	6	58	22	34	68	59	129	132	2	5	0	0	71	108	981	3252
8	1	3	4	10	19	1	80	25	23	53	72	125	129	9	11	0	2	66	119	948	2975
0	3	1	2	9	17	1	83	35	33	49	65	107	130	4	6	0	0	70	114	939	3245
7	1	0	2	10	13	2	72	41	26	41	61	121	113	3	3	0	1	62	94	892	3238
5	3	0	1	10	10	5	71	33	22	42	53	102	110	4	13	0	4	63	72	885	3394
2	1	0	2	7	18	2	69	41	23	32	84	98	120	2	7	0	17	50	126	957	4518
2	1	1	1	5	12	3	85	59	17	21	87	86	118	2	6	0	8	53	103	950	2685
6	0	1	2	2	9	0	85	51	13	27	98	72	123	0	5	0	0	57	112	945	3056
5	0	1	3	3	13	2	89	36	12	19	87	58	138	2	2	0	0	43	103	935	2928
6	0	0	0	4	12	2	80	24	12	37	61	73	108	3	3	0	0	39	82	921	3427
5	0	1	0	5	7	4	74	21	12	58	48	78	94	0	2	0	0	52	73	866	1715
5	1	5	0	5	10	2	78	37	21	59	53	84	91	1	4	0	0	65	84	947	1974
8	1	4	0	3	12	4	97	48	30	54	54	80	114	2	2	0	0	70	96	946	1976
2	0	2	1	4	15	6	95	54	27	41	43	76	111	1	4	0	0	69	81	879	2102
6	0	1	1	3	12	7	97	59	13	33	52	83	96	1	4	0	0	48	94	1011	1943
7	2	0	1	8	7	4	95	48	19	36	65	72	122	0	0	0	0	54	86	884	2158
9	1	0	0	10	7	2	115	43	21	28	39	78	99	0	5	0	0	39	89	1008	2017
8	2	0	0	1	10	5	91	45	48	37	39	96	93	2	0	1	1	46	113	1023	2157
0	1	0	0	5	12	1	67	31	51	36	39	77	129	1	1	0	1	41	55	1026	2165

MONTHLY RETURNS.

PART X.

FIELD FORCES AND DETACHED CORPS.

Field Forces

		Remained.		*Entered.*		*Total.*		*Cholera.*		*Dysentery*		*Diarrhœ.*		*Fever.*	
		Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
1815	For March	287	404	300	610	587	1014	1	0	152	75	12	41	95	428
	,, April	374	360	323	630	697	990	3	0	202	141	14	65	96	425
	,, November	94	110	62	130	156	240	0	7	24	5	0	4	21	63
	,, December	27	60	96	209	123	269	0	0	36	22	0	4	29	84
1816	For January	35	84	161	206	196	290	0	1	113	39	0	13	10	53
	,, February	73	115	146	237	219	352	0	0	117	30	0	12	15	55
	,, March	95	150	144	201	239	351	0	0	94	13	1	9	24	53
	,, April	97	137	146	171	243	308	0	0	66	11	0	1	22	67
	,, May	129	97	109	190	238	287	0	0	42	18	0	4	28	77
	,, June	37	23	28	54	65	77	0	0	8	7	0	0	10	27
1817	For July	37	62	175	138	212	200	0	0	94	17	0	7	21	55
	,, August	64	84	221	209	285	293	1	0	81	45	0	10	47	60
	,, September	136	114	165	129	301	243	1	1	91	43	0	0	39	51
	,, October	153	266	380	826	533	1092	1	2	160	124	1	3	79	305
	,, November	152	371	424	1495	576	1866	1	0	186	111	0	0	144	1072
	,, December	192	928	311	1294	503	2222	0	5	104	163	3	1	126	1017
1818	For January	201	1157	255	1280	456	2437	6	42	98	142	0	5	83	916
	,, February	159	894	244	1044	403	1938	0	2	86	101	0	2	89	822
	,, March	72	686	207	686	279	1372	0	0	66	26	0	29	59	530
	,, April	120	675	201	722	321	1397	1	4	78	52	1	18	67	562
	,, May	128	533	235	983	363	1516	1	12	75	34	3	48	82	427
	,, June	151	447	179	524	330	971	0	13	75	34	2	77	55	267
	,, July	124	346	144	502	268	848	1	74	53	28	0	52	34	234
	,, August	116	320	415	563	531	883	216	122	67	20	6	8	40	311
	,, September	218	436	267	559	485	995	199	156	67	42	2	19	52	286
	,, October	121	243	160	443	281	686	11	23	49	15	0	11	54	292
	,, November	109	347	182	715	291	1062	1	101	63	31	0	12	49	490
	,, December	109	974	160	548	269	1522	1	44	44	57	0	17	54	931
1819	For January	90	772	159	506	249	1278	1	14	45	42	1	15	51	778
	,, February	102	313	140	326	242	639	1	15	48	36	1	7	42	258
	,, March	99	298	253	596	352	894	15	82	87	29	3	7	59	284
	,, April	85	751	208	709	293	1460	82	344	66	28	0	2	50	645
	,, May	65	330	140	434	205	764	6	68	71	34	3	8	43	243
	,, June	89	460	116	335	205	795	2	49	69	13	4	14	26	336
	,, July	82	208	117	419	199	657	1	1	58	19	4	26	24	307
	,, August	92	222	105	429	197	651	0	15	54	23	1	15	32	321
	,, September	72	256	107	321	179	577	0	4	39	20	0	5	34	311
	,, October	67	242	91	799	158	1041	0	0	13	12	0	4	47	818
	,, November	59	597	93	646	152	1243	1	24	16	49	0	0	48	909
	,, December	56	545	82	434	138	979	0	16	15	58	1	34	54	581
1820	For January	50	308	83	259	133	567	5	43	26	35	1	6	43	282
	,, February	65	200	94	255	159	455	7	46	38	19	5	3	40	158
	,, March	68	222	77	325	145	547	3	13	32	18	3	3	32	287
	,, April	52	192	91	369	143	561	0	31	23	28	1	5	45	281
	,, May	58	193	103	344	161	537	1	22	49	21	1	3	40	258
	,, June	66	197	89	347	155	544	1	5	55	23	1	19	38	213
	,, July	63	241	73	346	136	587	0	1	50	38	1	21	25	242
	,, August	56	270	73	371	129	641	0	17	33	24	0	7	37	325
	,, September	50	215	84	238	134	453	0	3	18	18	2	6	50	188
	,, October	41	231	112	567	153	798	0	3	31	26	1	46	44	355
	,, November	43	241	119	466	162	707	0	1	33	27	0	11	45	317
	,, December	80	232	89	275	169	507	0	1	29	21	0	12	53	192

d Detached Corps. Table X.

patitis.	Ophthalmia.		Rheumatism.		Ulcers.		Venereal.		Other diseases.		Cured.		Dead.		Transferred.		Remaining.		Strength.	
Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
4	13	5	12	64	96	64	94	67	70	266	340	609	7	12	4	41	236	352	3044	10067
5	15	8	14	26	137	61	101	55	66	204	387	625	9	12	27	64	274	289	3007	9837
0	3	3	3	28	14	10	10	39	43	81	69	125	0	1	60	54	27	60	1072	3299
1	1	2	1	7	8	13	18	52	18	84	88	175	1	0	0	0	34	94	1132	3588
0	1	2	2	16	6	13	23	70	24	83	123	173	0	2	0	0	73	115	1257	3633
0	0	0	0	12	9	23	29	80	23	140	119	199	3	3	1	0	96	150	1262	3575
0	1	1	1	18	13	24	35	102	35	131	136	204	1	2	0	0	102	145	1217	3655
0	3	8	2	25	8	25	80	88	38	83	100	195	1	3	13	13	129	97	1080	3641
0	0	3	4	29	5	20	78	64	50	72	107	174	5	2	0	0	126	111	1099	3560
0	0	1	2	6	3	3	24	7	11	26	31	48	0	0	0	0	34	29	493	1447
0	3	5	4	26	2	23	30	34	34	33	120	105	4	1	24	10	64	84	1168	2115
0	5	5	8	20	5	36	52	47	64	70	141	174	8	4	0	0	136	115	1285	2971
0	3	4	9	13	6	32	68	42	63	57	172	122	4	4	1	6	124	111	1290	3012
3	5	16	10	70	28	172	113	94	84	303	293	635	12	9	59	48	169	400	2379	12131
1	4	7	8	53	17	158	103	90	81	374	305	668	7	11	69	309	195	878	1968	9815
3	3	5	8	98	15	201	80	84	135	645	289	1125	12	41	74	346	128	710	2082	10957
8	2	10	8	146	21	258	66	108	135	802	277	1235	15	43	0	51	164	1108	2074	14196
8	1	9	5	83	14	153	43	113	125	645	238	884	14	44	4	15	147	995	2359	13271
1	0	16	3	74	9	102	56	119	63	475	149	679	7	14	3	20	120	659	1421	11096
3	3	7	8	90	13	131	69	131	59	399	176	762	12	12	5	133	128	490	1415	12957
4	2	12	10	94	9	317	60	130	105	438	199	697	6	20	7	51	151	748	1417	12146
1	3	6	8	49	14	144	68	114	91	266	194	538	4	11	8	1	124	421	1399	9748
2	3	5	8	56	9	46	86	123	55	228	147	478	5	24	0	0	116	346	1196	9096
4	4	12	12	57	10	44	101	125	53	180	262	449	51	54	0	0	218	380	1146	8264
0	2	15	14	74	3	45	80	123	66	235	323	624	41	38	0	1	121	332	1095	9382
2	4	10	22	50	6	30	52	80	71	173	163	371	9	19	0	15	109	281	1076	6666
2	13	7	17	62	24	40	52	93	57	224	176	472	6	54	0	0	109	536	1066	8268
5	17	11	21	64	19	42	59	103	37	248	161	562	5	41	13	31	90	888	1069	8555
2	3	7	18	49	10	40	71	93	41	238	137	439	8	19	0	4	104	816	1058	7274
1	1	4	16	42	3	20	90	99	35	157	141	339	2	12	0	16	99	272	1057	5638
1	5	13	21	66	11	41	80	129	47	242	214	429	8	37	0	56	130	372	1125	8606
1	1	21	15	47	5	56	45	121	21	195	187	681	23	108	0	16	83	655	749	7706
2	1	19	19	48	6	21	24	111	27	210	108	442	4	15	4	1	89	306	604	7079
0	0	19	20	54	8	42	48	80	22	188	115	497	8	12	0	2	82	284	594	6989
1	0	15	25	45	6	18	57	63	15	162	100	426	7	5	0	4	92	222	585	5546
1	0	13	22	22	4	20	63	71	17	150	123	361	2	5	0	0	72	285	600	6233
0	1	8	24	24	1	14	56	65	15	126	109	356	3	3	0	0	67	218	600	5407
0	1	4	27	24	1	19	49	56	10	104	98	430	1	14	0	0	59	597	584	6392
1	15	3	22	34	0	23	34	68	8	132	93	727	3	33	0	0	56	483	579	5806
1	5	13	15	42	5	14	27	77	10	143	86	521	2	31	0	0	50	427	576	6195
4	5	7	11	29	7	10	23	54	7	97	63	318	5	49	0	0	65	200	571	5192
2	2	7	11	30	6	14	28	68	12	108	88	200	3	33	0	0	68	222	566	5388
1	2	10	15	31	4	13	31	60	12	111	91	341	2	14	0	0	52	192	547	5755
1	3	8	17	45	1	12	25	38	21	112	81	353	4	15	0	0	58	193	545	5937
5	3	16	16	40	2	16	19	44	19	112	90	319	5	21	0	0	66	197	567	5902
2	1	13	17	55	3	19	15	58	14	137	86	289	6	14	0	0	63	241	555	7547
0	0	7	16	51	5	22	22	46	10	159	72	332	8	29	0	0	56	225	605	7612
1	1	6	13	36	5	23	20	27	13	175	75	337	4	34	0	13	50	257	601	7305
6	2	5	12	41	2	17	14	41	23	128	90	258	3	5	0	2	41	189	594	4315
1	4	2	14	67	8	43	20	76	20	179	85	422	1	33	0	9	67	334	1030	9466
0	3	4	2	61	12	47	23	67	34	172	76	435	6	15	0	0	80	257	596	7110
0	0	3	1	65	15	32	30	48	32	133	105	288	2	13	0	0	62	206	585	6000

A

GENERAL ABSTRACT

OF THE

TEN PRECEDING RETURNS,

EACH DIVISION BEING DISTINGUISHED.

A General Abstract of the Ten preceding

Years.	DIVISIONS.	Total in Hospital. Europeans.	Total in Hospital. Natives.	Cholera. Europeans.	Cholera. Natives.	Fever. Europeans.	Fever. Natives.	Ophthalmia. Europeans.	Ophthalmia. Natives.	Hepatitis. Europeans.	Hepatitis. Natives.	Rheumatism. Europeans.	Rheumatism. Natives.	Dyse Europeans.
1815	Hyderabad Sub. Force.	4112	10420	40	21	1876	6018	229	456	449	54	292	1862	1817
	Northern Division.....	1379	4249	0	7	409	3543	37	79	89	28	180	750	375
	Ceded Districts.......	1045	2570	5	5	310	1240	111	124	414	20	75	641	400
	Mysore Division......	5595	8143	8	32	3727	7603	424	176	1130	34	473	864	1208
	Centre do........	2443	1688	2	3	696	729	122	110	255	8	215	378	871
	Presidency do........	3237	3396	0	0	644	1387	403	121	647	27	335	717	1103
	Southern do........	1223	2786	6	9	141	1283	21	148	262	16	43	695	211
	Travancore Sub. Force.	1179	746	0	3	170	134	239	33	350	3	143	271	228
	Field Forces.........	1068	1983	4	7	241	1000	32	18	141	10	30	125	414
	Totals Eur. and Nat.	21281	36281	65	87	8214	22937	1618	1265	3737	200	1786	6303	6627
1816	Nagpore Sub. Force...	139	4367	0	12	111	3608	1	46	5	3	19	380	32
	Hyderabad Sub. Force.	3324	8194	18	35	1067	3414	91	188	376	54	278	1597	1283
	Northern Division.....	1218	4468	5	17	313	3253	29	107	183	28	158	781	281
	Ceded Districts.......	2070	3478	0	0	457	1547	118	98	717	5	124	1051	828
	Mysore Division......	2529	7133	12	19	442	5662	56	136	549	28	267	753	804
	Centre do.......	4044	1781	53	1	958	1212	357	70	492	17	313	493	1629
	Presidency do.......	3335	3051	0	0	755	1157	678	77	848	15	490	535	1186
	Southern do.......	1314	3181	0	7	200	1895	47	75	110	17	99	609	276
	Travancore Sub. Force.	1115	724	9	0	129	194	101	23	324	11	89	158	330
	Field Forces.........	769	1143	0	1	109	332	5	15	140	0	11	106	440
	Totals Eur. and Nat.	19857	37520	97	92	4541	22274	1483	835	3744	178	1848	6463	7089
1817	Nagpore Sub. Force...	70	2658	1	2	54	2650	0	32	4	0	4	302	20
	Hyderabad Sub. Force.	4124	10338	30	35	1163	5857	105	250	431	31	366	1959	1697
	Northern Division.....	1398	8960	1	17	310	8510	20	121	111	15	188	1438	397
	Ceded Districts.......	2248	3219	4	3	905	1732	58	55	534	13	82	730	475
	Mysore Division.......	1739	5566	7	28	300	4162	77	169	492	41	90	490	757
	Centre do........	3519	2140	2	6	731	940	370	70	682	20	262	503	1274
	Presidency do........	2796	2580	0	0	444	966	495	149	776	17	494	543	897
	Southern do........	2295	2860	71	11	315	1121	94	117	347	5	221	845	912
	Travancore Sub. Force.	1725	784	48	4	146	203	38	11	796	6	104	205	678
	Field Forces..........	1713	4153	4	8	456	2560	23	42	180	7	47	280	716
	Totals Eur. and Nat.	21627	43258	168	114	4824	28701	1280	1016	4353	155	1858	7295	7823
1818	Nagpore Sub. Force...	710	5497	9	313	670	4529	3	65	15	2	29	404	65
	Hyderabad Sub. Force.	3749	11407	206	961	1465	8129	68	180	300	41	259	1892	1482
	Northern Division.....	808	7953	67	459	198	6707	6	134	98	1	114	939	155
	Ceded Districts.......	2677	2086	162	93	491	957	116	37	659	10	94	445	1295
	Mysore Division.......	1986	4601	226	207	474	3230	91	58	459	24	91	490	848
	Centre do........	2797	2614	219	306	576	938	266	79	304	3	228	449	646
	Presidency do........	2627	2324	41	89	591	841	321	58	557	2	567	484	1177
	Southern do........	2829	2416	255	260	976	922	277	95	266	2	264	541	999
	Travancore Sub. Force.	780	851	30	33	28	236	30	19	246	5	63	220	239
	Field Forces.........	2850	9726	437	593	718	6068	54	120	237	40	136	899	821
	Totals Eur. and Nat.	21813	49475	1652	3314	6187	32557	1232	845	3141	130	1845	6763	7727
1819	Nagpore Sub. Force...	1366	9019	14	159	984	7971	11	154	94	11	25	759	334
	Hyderabad Sub. Force	2851	9095	57	425	998	5907	84	310	384	37	194	1163	953
	Northern Division......	422	7395	7	227	150	4331	13	106	57	3	73	1164	112
	Ceded Districts.......	250	3345	0	133	83	1986	17	71	71	7	24	538	33
	Mysore Division.......	2701	7795	45	723	744	5230	104	134	705	9	146	848	745
	Centre do........	3848	6572	436	664	924	2642	291	134	275	13	375	733	946
	Presidency do........	3538	3416	103	139	1193	1232	342	66	553	8	489	596	1589
	Southern do........	2314	4812	52	523	841	2747	274	116	202	2	240	799	804
	Travancore Sub. Force.	1198	1808	107	154	66	555	14	21	381	20	79	215	232
	Field Forces..........	1701	6756	109	632	510	5791	33	139	102	11	244	497	581
	Totals Eur. and Nat.	20189	60013	930	3779	6493	38392	1183	1251	2824	121	1889	7312	6329
1820	Nagpore Sub. Force...	1428	8209	37	143	793	6546	24	108	87	25	80	582	344
	Hyderabad Sub. Force	2590	8966	55	859	789	5114	87	211	356	36	259	1234	733
	Northern Division......	306	6740	7	162	74	3567	3	55	32	22	79	791	76
	Ceded Districts.......	1300	3256	49	327	548	1648	101	39	91	3	85	547	495
	Mysore Division.......	3359	9970	48	824	751	6002	158	121	1024	71	124	922	1012
	Centre do........	1000	6515	12	135	165	2485	99	116	246	39	220	804	239
	Presidency do........	3787	4766	75	196	1265	1657	110	63	775	26	457	772	1634
	Southern do........	1468	8311	30	475	440	4151	44	122	206	8	126	923	294
	Travancore Sub. Force.	982	1386	26	15	59	205	15	8	288	8	53	126	104
	Field Forces..........	1137	4470	17	186	492	3098	26	88	109	23	145	551	417
	Totals Eur. and Nat.	17357	62589	356	3322	5376	34473	667	931	3214	261	1628	7252	5348

urns, each Division being distinguished. *Table XI.*

Diarrhœ.		*Venereal.*		*Ulcers.*		*Other diseases.*		*Cured.*		*Dead.*		*Transferred.*		*Remaining.*		*Strength.*	
Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
0	46	591	1477	343	1204	1083	3472	3730	9403	167	126	89	507	126	486	2276	12954
16	52	617	751	254	364	396	1614	1206	3540	84	176	2	247	87	286	968	7299
9	60	290	673	93	373	207	1022	849	2289	38	50	22	36	136	210	758	4963
32	324	1001	948	417	1016	1207	2937	5103	7545	148	231	184	255	131	390	2847	9796
29	54	419	313	511	212	866	1045	2044	1619	88	37	33	11	247	104	1573	4037
96	160	770	851	361	328	1238	1872	2624	2993	120	44	42	13	325	194	1415	5325
106	97	449	709	114	444	456	1099	1066	2487	29	84	36	3	42	289	709	6317
82	12	252	259	171	173	376	554	1099	644	31	23	0	5	51	62	799	2283
26	114	223	213	255	148	197	635	884	1534	17	25	91	159	34	94	2064	6698
396	919	4612	6194	2519	4262	6026	14250	18605	32054	722	796	499	1236	1779	2115	13409	59672
0	204	4	256	6	689	26	773	116	3447	2	53	11	400	10	484	103	6338
0	0	911	1574	372	1075	761	3590	2925	7072	150	101	47	353	194	497	2494	11341
18	143	641	806	186	476	382	1877	1065	3777	73	185	0	85	70	421	858	8725
6	56	620	872	204	519	660	1669	1850	3017	64	35	108	193	145	268	1494	5645
30	175	860	524	177	468	1017	3207	2315	6365	65	181	25	142	113	212	1828	8408
38	39	746	384	340	258	1641	1185	3518	1735	86	26	209	55	300	188	2522	4051
146	130	816	697	458	252	1733	1891	2867	2758	114	73	54	19	286	152	1673	5073
66	106	180	610	66	534	757	1485	1230	2782	31	96	6	7	115	288	1029	6817
42	9	390	123	31	114	381	488	987	638	16	23	12	30	87	40	874	2319
1	39	269	411	44	108	181	535	616	993	10	12	14	13	34	29	1068	3252
347	901	5437	6257	1884	4493	7539	16700	17489	32584	611	785	486	1297	1354	2579	13943	61969
1	56	1	132	2	323	19	441	59	1732	2	32	1	159	6	440	61	4057
0	38	1057	1507	202	1132	1065	4608	3491	9049	172	140	166	611	187	788	1927	12110
8	214	803	1114	291	811	498	3467	1239	7169	69	350	10	377	121	1078	1127	10966
4	107	735	693	161	386	678	1830	1930	2892	49	51	24	94	130	227	1093	4068
22	234	413	544	280	528	637	1958	1487	4846	58	150	32	99	91	211	1236	6635
18	41	651	452	334	319	1440	1424	3135	1868	102	45	127	73	168	191	2311	3879
135	104	777	446	253	340	1488	1511	2382	2348	112	52	29	0	219	149	1432	4882
99	143	708	447	119	936	877	1408	2098	2544	66	84	0	3	105	179	981	5802
13	14	427	157	126	205	615	534	1571	673	39	33	3	10	112	67	1096	2408
4	21	446	391	73	622	461	1482	1320	2829	47	70	227	719	128	710	1695	6834
304	972	6018	5883	1841	5602	7778	18663	18712	35950	716	1007	619	2145	1267	4040	12959	61641
0	177	35	536	4	514	164	1974	623	4561	38	127	5	144	53	592	217	3638
0	0	777	1836	189	1568	912	4733	3077	9130	277	536	150	738	133	1154	1539	10999
23	251	350	986	100	678	316	3929	616	6486	61	576	8	330	38	582	508	10135
13	47	712	602	205	240	757	1025	2210	1729	112	66	175	89	64	101	1377	2474
8	160	393	481	164	429	561	1644	1729	4100	101	191	35	17	165	260	1297	5874
40	70	435	341	410	201	1099	1459	2394	3251	114	114	112	12	174	188	1421	3972
233	123	521	361	314	220	1040	1237	2213	2060	118	101	48	12	246	108	1289	4309
84	97	769	340	157	594	680	1038	2593	2024	79	156	31	1	126	221	1075	4885
10	7	287	195	56	235	311	443	725	728	28	21	0	45	27	88	534	2174
14	298	792	1362	151	1352	917	4313	2465	7751	175	374	40	318	90	888	1395	10304
425	1230	5071	7040	1750	6031	6757	21795	18645	41820	1103	2262	604	1706	1116	4182	10652	58764
68	231	198	1037	34	1035	207	2106	1193	7701	72	169	21	287	59	473	393	5674
9	32	1299	1672	90	985	672	3418	2569	7943	131	302	22	43	125	818	1579	10815
39	313	94	1226	75	695	277	4080	367	6571	36	229	0	98	18	442	445	10157
0	45	77	649	10	430	127	1546	237	3150	5	60	1	24	4	256	186	2625
11	221	597	692	331	738	1172	2724	2441	6816	68	391	15	142	167	433	1850	7860
338	274	443	429	361	511	1150	3598	3357	5960	190	200	82	76	155	312	1115	6629
391	261	711	398	243	327	1372	2048	3003	3093	162	123	37	5	305	192	1330	4782
56	333	485	482	144	1003	745	1545	2165	4435	76	285	8	8	122	363	1716	5592
15	35	378	346	25	750	503	785	1106	1584	37	96	1	47	53	103	785	3075
18	137	644	1033	60	328	268	2047	1511	5648	71	294	4	99	50	427	726	6573
945	1882	4926	7964	1373	6802	6493	23897	17949	52901	848	2149	191	829	1058	3819	10125	63782
27	364	258	1069	47	1139	409	2937	1298	7229	42	210	23	151	65	442	515	7166
81	281	913	1866	87	1043	871	3775	2262	8234	116	509	23	81	159	434	1638	12122
28	231	53	1152	16	691	193	3548	262	6018	30	219	0	75	15	259	417	11103
0	41	349	741	100	455	289	1301	1200	2896	45	187	4	2	37	179	673	4072
26	239	594	1149	398	1662	1592	4078	3150	8854	96	548	22	98	219	419	2241	12016
34	383	138	413	71	505	401	4117	797	5977	41	146	18	7	68	246	165	6665
313	300	703	603	277	407	1737	2949	3313	4298	112	158	56	1	292	260	1330	6710
114	431	243	811	135	1790	656	4260	1323	7770	44	252	0	1	101	561	873	8253
18	17	497	279	39	1063	465	678	927	1318	13	32	1	2	41	55	950	2302
16	142	270	627	70	268	217	1623	1002	3892	49	275	0	24	62	206	614	6461
657	2429	4018	8710	1240	9023	6830	29266	15534	56486	588	2536	147	442	1059	3061	9416	76870

AN

ABSTRACT OF DISEASES

OF THE

ARMY OF FORT ST. GEORGE,

FROM THE YEAR 1815 TO 1821

INCLUSIVE.

An Abstract of Diseases of the Army of Fort St. Georg

Years.	*Total in Hospital.*		*Cholera.*		*Fever.*		*Ophthalmia.*		*Hepatitis.*		*Rheumatism.*		*Dysentery*		*Diarrhœ*	
	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
1815	21281	36281	65	87	8214	22937	1618	1265	3737	200	1786	6303	6627	3181	396	91
1816	19857	37520	97	92	4541	22274	1483	835	3744	178	1848	6463	7089	2820	347	90
1817	21627	43258	168	114	4824	28701	1280	1016	4353	155	1858	7295	7823	3254	304	97
1818	21813	49475	1652	3314	6187	32557	1232	845	3141	130	1845	6763	7727	2979	425	123
1819	20189	60013	930	3779	6493	38392	1183	1251	2824	121	1889	7312	6329	2917	945	188
1820	17357	62589	356	3322	5376	34473	667	931	3214	261	1628	7252	5348	2553	657	242
1821	17429	49449	*357	2527	3442	18165	393	706	2110	95	754	3683	2910	1338	425	137

* *See explanation of the Tables.*

from the year 1815 *to* 1821, *inclusive.* *Table XII.*

enereal.		*Ulcers.*		*Other diseases.*		*Cured.*		*Dead.*		*Transferred.*		*Remaining.*		*Strength.*	
Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
12	6194	2519	4262	6026	14250	18605	32054	722	796	499	1236	1179	2115	13409	59672
37	6257	1884	4493	7539	16700	17489	32584	611	785	486	1297	1354	2579	13943	61969
18	5883	1841	5602	7778	18663	18712	35950	716	1007	619	2145	1267	4040	12959	61641
71	7040	1750	6031	6757	21795	18645	41820	1103	2262	604	1706	1116	4182	10652	58764
26	7964	1373	6802	6493	23897	17949	52901	848	2149	191	829	1058	3819	10125	63782
18	8710	1240	9023	6830	29266	15534	56486	588	2536	147	442	1059	3061	9416	76870
91	3749	645	4170	3902	13645	15485	44679	604	1929	185	895	1152	2076	9553	82046

A
GENERAL RETURN
OF
SICK
OF THE
ARMY OF FORT ST. GEORGE,
FOR THE YEAR 1821,

Each Division being distinguished.

A General Return of Sick of the Army of Fort St. George, fo

Presidency Division.

DISEASES.	*Remained 1st Jan.*		*Entered in 1821.*		*Total.*		*Cured.*		*Dead.*		*Transferred.*		*Remaining 31st Dec. 1821.*		*Strength.*	
	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
Cholera	0	2	76	71	76	73	64	43	7	27	1	0	2	1		
Febris	41	61	596	981	637	1042	581	1001	11	26	2	0	34	13		
Ophthalmia ..	4	1	43	49	47	50	45	51	0	0	0	0	3	0		
Hepatitis	50	2	448	6	498	8	454	4	29	3	2	0	26	1		
Rheumatismus	19	38	143	250	162	288	140	254	4	8	0	0	20	26		
Dysenteria ..	56	8	691	70	747	78	648	64	49	11	0	0	57	4		
Diarrhæa	14	7	131	165	145	172	108	171	9	6	1	0	24	3		
Morbus Venereus ..	25	37	206	235	231	272	202	236	2	3	1	0	23	32		
Ulcus	12	18	130	134	142	152	130	141	2	0	1	0	10	9		
Alii Morbi	68	86	813	1441	881	1527	764	1426	27	31	5	0	102	62	1457	757
Total Eur. and Nat.	289	260	3277	3402	3566	3662	3136	3391	140	115	13	0	301	151		

Centre Division.

DISEASES.	*Remained 1st Jan.*		*Entered in 1821.*		*Total.*		*Cured.*		*Dead.*		*Transferred.*		*Remaining 31st Dec. 1821.*		*Strength.*	
	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
Cholera	0	1	25	198	25	199	18	154	6	64	0	0	1	0		
Febris	0	50	44	1505	44	1555	39	1521	4	25	0	5	3	22		
Ophthalmia	7	3	8	66	15	69	5	62	0	1	7	0	3	4		
Hepatitis	13	0	129	7	142	7	97	6	5	2	20	0	21	1		
Rheumatismus ..	10	33	88	360	98	393	72	341	0	5	22	6	6	41		
Dysenteria	8	3	120	186	128	189	102	189	11	8	9	0	6	5		
Diarrhæa	1	5	7	148	8	153	8	142	0	5	0	3	0	1		
Morbus Venereus ..	13	15	32	258	45	273	19	253	2	2	16	6	6	22		
Ulcus	5	16	27	285	32	301	22	278	1	1	2	2	6	30		
Alii Morbi .. .	10	122	124	1337	134	1459	83	1331	11	32	20	11	16	96	410	99
Total Eur. and Nat.	67	248	604	4350	671	4598	465	4277	40	145	96	33	68	222		

Southern Division.

DISEASES.	*Remained 1st Jan.*		*Entered in 1821.*		*Total.*		*Cured.*		*Dead.*		*Transferred.*		*Remaining 31st Dec. 1821.*		*Strength.*	
	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
Cholera	0	2	34	201	34	203	27	133	8	71	0	0	1	0		
Febris	28	86	257	1025	285	1111	268	1022	9	29	0	0	5	36		
Ophthalmia	2	5	31	93	33	98	31	92	0	1	0	0	2	4		
Hepatitis	11	0	146	11	157	11	143	8	3	1	2	0	8	2		
Rheumatismus	4	54	74	341	78	395	65	342	1	2	1	5	12	26		
Dysenteria	8	10	237	144	245	154	197	134	39	16	0	0	9	8		
Diarrhæa	4	5	95	116	99	121	95	113	1	8	1	0	2	1		
Morbus Venereus	14	29	223	215	237	244	208	216	0	1	0	0	29	21		
Ulcus	5	74	78	401	83	475	75	403	0	1	0	0	8	27		
Alii Morbi	25	287	413	1686	438	1973	406	1858	15	13	1	1	23	49	1007	79
Total Eur. and Nat.	101	552	1588	4233	1689	4785	1515	4321	76	143	5	6	99	174		

Travancore Subsidiary Force.

DISEASES.	*Remained 1st Jan.*		*Entered in 1821.*		*Total.*		*Cured.*		*Dead.*		*Transferred.*		*Remaining 31st Dec. 1821.*		*Strength.*	
	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
Cholera	0	0	23	41	23	41	22	31	0	10	0	0	0	0		
Febris	2	4	32	180	34	184	35	201	0	3	0	1	0	0		
Ophthalmia	0	0	17	6	17	6	17	9	0	0	0	0	0	0		
Hepatitis	8	0	206	3	214	3	206	3	1	0	0	0	6	0		
Rheumatismus ..	2	3	66	124	68	127	62	114	0	0	0	10	5	8		
Dysenteria	4	1	111	28	115	29	105	29	9	1	0	1	2	0		
Diarrhæa	3	1	12	30	15	31	13	31	1	0	0	0	1	0		
Morbus Venereus ..	12	18	181	177	193	195	184	162	1	1	0	25	6	12		
Ulcus	0	18	19	457	19	475	19	398	0	3	0	58	0	41		
Alii Morbi	11	10	316	421	327	431	304	417	6	11	1	18	13	7	988	28
Total Eur. and Nat.	42	55	983	1467	1025	1522	967	1395	18	29	1	113	33	68		

the Year 1821, each Division being distinguished. Table XIII.

DISEASES.	Remained 1st Jan.		Entered in 1821.		Total.		Cured.		Dead.		Transferred.		Remaining 31st Dec. 1821.		Strength.	
	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
Northern Division.																
olera	0	2	15	87	15	89	10	94	5	26	0	0	0	0		
bris	1	48	35	1241	36	1289	34	1214	3	28	0	24	1	27		
hthalmia	0	3	1	50	1	53	1	53	0	1	0	0	0	0		
patitis	2	0	24	12	26	12	23	9	2	1	0	1	2	1		
eumatismus	1	36	18	388	19	424	19	336	0	8	0	32	0	36		
senteria	0	3	17	59	17	62	15	55	1	5	0	1	1	2		
rrhæa	1	1	27	89	28	90	24	84	1	2	0	2	1	2		
rbus Venereus ..	1	44	57	313	58	357	54	317	0	3	0	11	3	17		
cus	0	27	12	305	12	332	10	292	0	1	0	11	3	21		
i Morbi	5	93	102	1002	107	1095	95	962	11	53	0	34	1	45	431	9279
Total Eur and Nat	11	257	308	3546	319	3803	285	3416	23	128	0	116	12	151		
Mysore Division.																
lera	1	1	110	98	111	99	106	93	3	58	0	0	1	0		
ris	31	126	447	3009	478	3135	439	2941	9	67	0	16	28	103		
hthalmia	5	6	89	119	94	125	90	119	0	0	1	3	2	0		
atitis	52	3	553	20	605	23	502	14	28	5	1	0	73	0		
eumatismus	9	38	67	452	76	490	64	450	1	9	1	13	9	25		
senteria	30	3	586	133	616	136	538	110	43	13	2	7	34	6		
rrhæa	0	1	22	224	22	225	22	205	1	6	0	0	0	3		
bus Venereus ..	40	86	424	492	464	578	421	507	1	7	0	9	46	48		
us	6	68	151	763	157	831	159	778	0	8	0	6	5	31		
Morbi	48	119	947	1846	995	1965	917	1812	14	55	3	166	57	74	2043	12297
Total Eur. and Nat.	222	451	3396	7156	3618	7607	3258	7029	100	228	8	220	255	290		
Ceded Districts.																
lera	0	37	4	556	4	593	4	352	0	181	0	3	0	0		
ris	11	51	362	1475	373	1526	366	1427	1	39	0	11	6	50		
thalmia	0	3	60	50	60	53	59	51	0	0	0	2	1	3		
atitis	3	0	62	4	65	4	54	3	3	1	0	0	8	0		
umatismus	1	52	16	256	17	308	15	238	0	4	0	37	2	37		
enteria	1	1	74	153	75	154	70	124	3	13	0	6	2	4		
rrhæa	0	2	1	113	1	115	1	122	0	3	0	1	0	3		
bus Venereus ..	14	44	241	480	255	524	233	449	2	6	0	12	20	75		
us	4	17	30	235	34	252	33	235	0	0	0	10	1	16		
Morbi	3	45	127	1164	130	1209	117	1138	5	29	1	15	7	41	473	6008
Total Eur. and Nat.	37	252	977	4486	1014	4738	952	4139	14	276	1	97	47	229		
Hyderabad Subsidiary Force.																
lera	0	0	14	726	14	726	13	442	1	224	0	23	0	0		
ris	18	99	462	2009	480	2108	448	1920	6	139	6	27	17	67		
thalmia ..	2	4	97	102	99	106	91	97	0	0	3	2	3	5		
atitis	22	1	223	13	245	14	191	9	23	4	4	0	27	1		
umatismus	10	53	121	505	131	558	109	493	0	2	11	42	10	40		
enteria ..	29	3	372	192	401	195	336	145	26	23	5	14	32	5		
rrhæa	0	3	22	157	22	160	20	138	0	4	0	6	0	1		
bus Venereus	38	58	340	455	378	513	324	457	1	1	6	16	39	25		
us	4	42	67	443	71	485	64	438	0	6	1	4	6	21		
Morbi ..	20	60	417	1224	437	1284	376	1181	11	39	14	15	27	47	1182	9726
Total Eur. and Nat.	143	323	2135	5826	2278	6149	1972	5320	68	442	50	149	161	212		

A General Return of Sick, &c. continued.

Nagpore Subsidiary Force.

DISEASES.	*Remained 1st Jan.*		*Entered in 1821.*		*Total.*		*Cured.*		*Dead.*		*Transferred.*		*Remaining 31st Dec. 1821.*		*Strength.*	
	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
Cholera	0	3	43	43	43	46	34	31	9	15	0	0	0	0		
Febris	12	214	780	3530	792	3744	741	3525	16	71	4	0	28	126		
Ophthalmia	0	2	18	81	18	83	16	78	0	0	1	0	1	7		
Hepatitis	2	0	63	8	65	8	56	7	4	0	0	0	2	0		
Rheumatismus	10	16	67	250	77	266	72	217	2	4	0	3	4	35		
Dysenteria	8	1	281	121	289	122	244	110	31	13	2	0	9	2		
Diarrhæa	2	8	80	161	82	169	71	165	6	6	0	0	4	3		
Morbus Venereus ..	11	72	255	351	266	423	237	359	5	6	3	1	20	34		
Ulcus	3	64	52	402	55	466	49	447	0	2	0	0	6	15		
Alii Morbi	17	75	339	1161	356	1236	322	1145	12	38	1	0	22	38	969	708
Total Eur. and Nat.	65	455	1978	6108	2043	6563	1842	6084	85	155	11	4	96	260		

Field Force Dooab.

DISEASES.	*Remained 1st Jan.*		*Entered in 1821.*		*Total.*		*Cured.*		*Dead.*		*Transferred.*		*Remaining 31st Dec. 1821.*		*Strength.*	
	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
Cholera	0	0	12	142	12	142	12	85	0	57	0	0	0	0		
Febris	17	56	266	1413	283	1469	269	1411	7	13	0	5	14	37		
Ophthalmia	0	1	9	34	9	35	9	33	0	0	0	0	0	2		
Hepatitis	5	0	88	2	93	2	83	1	5	0	0	0	5	1		
Rheumatismus	0	36	28	229	28	265	22	242	0	2	0	1	6	21		
Dysenteria	8	7	269	116	277	123	235	105	24	13	0	2	18	5		
Diarrhæa ..	0	5	3	100	3	105	3	103	0	1	0	0	0	0		
Morbus Venereus ..	19	32	345	228	364	260	333	236	0	0	0	1	31	26		
Ulcus	7	17	33	226	40	243	35	227	0	1	0	1	5	14		
Alii Morbi ...	6	52	91	940	97	992	92	885	4	40	0	11	1	64	593	61
Total Eur. and Nat.	62	206	1144	3430	1206	3636	1093	3328	40	127	0	21	80	170		

Camp Sholapore and Malligaum, &c.

DISEASES.	*Remained 1st Jan.*		*Entered in 1821.*		*Total.*		*Cured.*		*Dead.*		*Transferred.*		*Remaining 31st Dec. 1821.*		*Strength.*	
	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
Cholera	0	0	0	316	0	316	0	163	0	97	0	35	0	1		
Febris	0	83	0	919	0	1002	0	872	0	22	0	37	0	72		
Ophthalmia	0	0	0	28	0	28	0	28	0	0	0	0	0	1		
Hepatitis	0	0	0	3	0	3	0	1	0	0	0	1	0	1		
Rheumatismus	0	17	0	152	0	169	0	139	0	0	0	23	0	21		
Dysenteria	0	3	0	93	0	96	0	75	0	3	0	10	0	5		
Diarrhæa	0	0	0	30	0	30	0	30	0	0	0	2	0	0		
Morbus Venereus ..	0	13	0	97	0	110	0	96	0	6	0	15	0	10		
Ulcus	0	9	0	149	0	158	0	147	0	0	0	5	0	8		
Alii Morbi ...	0	19	0	455	0	474	0	428	0	13	0	8	0	30	0	32
Total Nat.	0	144	0	2242	0	2386	0	1979	0	141	0	136	0	149		

AN

ABSTRACT

OF THE

GENERAL RETURN

OF

SICK

OF THE

ARMY OF FORT ST. GEORGE,

FOR THE YEAR 1821.

An Abstract of the General Return of Sick of the Army of Fort St. George, for the Year 1821. *Table XIV.*

DISEASES.	*Remained.*		*Entered.*		*Total.*		*Cured.*		*Dead.*		*Transfered.*		*Remaining.*		*Strength.*	
	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
Cholera	1	48	356	2479	357	2527	310	1621	39	830	1	61	5	2		
Febris	161	878	3281	17287	3442	18165	3220	17055	66	462	12	126	136	553		
Ophthalmia	20	28	373	678	393	706	364	673	0	3	12	7	15	26		
Hepatitis	168	6	1942	89	2110	95	1809	65	103	17	29	2	178	8		
Rheumatismus	66	376	688	3307	754	3683	640	3166	8	44	35	172	74	316		
Dysenteria	152	43	2758	1295	2910	1338	2490	1140	236	119	18	41	170	46		
Diarrhæa	25	38	400	1333	425	1371	365	1304	19	41	2	14	32	17		
Morbus Venereus	187	448	2304	3301	2491	3749	2215	3288	14	36	26	96	223	322		
Ulcus	46	370	599	3800	645	4170	596	3784	3	23	4	97	50	233		
Alii Morbi	213	968	3689	12677	3902	13645	3476	12583	116	354	46	279	269	553		
Total.	1039	3203	16390	46246	17429	49449	15485	44679	604	1929	185	895	1152	2076	9553	82046

A
TABLE
OF
DISEASES
FROM WHICH THE
CASUALTIES
HAVE OCCURRED IN THE
ARMY OF FORT ST. GEORGE,
FOR THE YEAR 1821.

A Table of Diseases from which the Casualties have occurred in

DISEASES.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		Total.		Grand Total of Europeans and Natives.
	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	
PYREXIÆ.																											
Febris Tertiana	5	60	0	11	0	2	2	8	0	8	0	4	0	5	0	7	0	1	2	5	2	3	1	6	12	120	132
" Quartana ..	0	0	0	1	0	1	0	1	0	3	0	10	0	4	0	0	0	0	0	0	0	1	0	0	0	21	21
" Quotidiana ..	0	0	0	9	1	21	2	11	0	5	0	0	0	0	1	5	0	2	1	9	0	8	1	5	6	75	81
" Remittens Biliosa	0	0	0	15	2	19	1	20	5	19	5	8	1	12	1	5	3	9	4	11	2	10	3	9	27	137	164
" Ephemera do	0	0	1	1	1	2	0	2	5	2	1	0	1	0	0	1	0	3	1	3	0	2	0	2	10	18	28
" Synocha	0	0	0	0	0	3	0	0	0	0	2	0	0	0	0	0	0	1	0	0	3	0	0	0	5	4	9
" Typhus ..	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	2
" Synochus ..	0	0	2	0	2	1	0	3	2	1	0	0	0	0	0	3	0	1	0	4	0	0	0	0	6	13	19
Phlogosis	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0	1	0	0	0	0	1	0	1	6	7
Ophthalmia	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	2	2
Phrenitis	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	2	3
Cynanche	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	3	3
Pneumonia	0	4	2	2	0	2	0	3	1	4	2	0	0	3	0	1	0	0	1	1	1	1	1	1	8	22	30
Carditis	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	2	0	2
Peritonitis	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Gastritis	0	0	0	0	0	1	1	0	0	0	0	0	2	0	0	1	0	0	0	0	0	1	1	0	4	3	7
Enteritis	1	2	1	0	0	0	0	1	1	0	0	0	2	1	0	1	0	1	0	0	0	0	0	1	5	7	12
Hepatitis	12	3	11	2	9	3	10	1	10	2	11	1	6	1	5	1	8	1	7	2	10	2	6	2	105	21	126
Splenitis	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Nephritis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1
Cystitis	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1
Rheumatismus	0	6	0	3	2	4	0	5	1	6	1	2	1	3	1	2	1	7	1	5	0	3	0	4	8	50	58
Odontalgia	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Arthropuosis	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Variola	0	7	1	1	0	8	0	11	0	2	0	1	0	8	0	1	0	1	0	0	0	2	0	1	1	43	44
Varicella	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3	3
Rubeola	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
Erysipelas	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	2
Urticaria	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
Hæmoptysis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1
Phthisis	2	4	1	0	2	3	0	0	1	3	3	4	1	3	2	0	1	2	1	2	0	2	0	3	14	26	40
Hæmorrhois	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	1	3	4
Catarrhus	0	1	0	0	0	1	0	0	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	5	5
Dysenteria	20	13	14	15	19	6	15	9	18	9	26	14	13	11	18	11	18	8	10	11	17	11	15	6	208	124	332
Do. Colonitis ..	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	8	0	5	2	7	0	3	0	31	2	33
NEUROSES.																											
Apoplexia	0	1	0	0	0	0	0	2	6	0	11	1	1	1	2	0	1	2	1	0	1	1	1	1	24	9	33
Paralysis	0	1	0	0	1	0	0	0	0	1	0	2	1	1	0	3	0	2	2	1	0	0	0	0	4	11	15
Dyspepsia	0	0	0	0	0	0	0	0	0	0	0	3	0	2	0	0	0	2	0	1	0	0	0	1	0	9	9

the Army of Fort St. George, for the Year 1821. Table XV.

Epilepsia	0	1	0	1	0	0	0	0	0	0	0	2	0	1	0	0	1	1	0	1	0	0	0	0	1	7	8
Palpitatio	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1
Asthma	0	1	0	1	0	1	0	1	0	2	1	1	0	2	0	1	0	0	1	1	0	2	1	5	3	18	21
Dyspnœa	0	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	6	6
Pertussis	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Pyrosis	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Cholica	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
Cholera	1	30	3	35	3	24	2	128	5	262	13	219	1	48	4	22	4	29	0	20	0	16	0	8	36	841	877
Diarrhæa	2	3	2	3	1	6	0	3	0	4	3	4	5	3	0	4	1	3	3	1	1	6	1	4	19	44	63
Diabetes	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Hydrophobia	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	2
Amentia	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	2	3
Mania	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	2
CACHEXIÆ.																											
Tabes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	3	3
Atrophia	0	5	0	3	0	2	0	2	0	1	0	2	0	3	0	3	0	3	0	0	0	3	0	2	0	29	29
Anasarca	0	7	0	4	1	5	0	1	1	7	1	7	2	4	1	7	3	5	1	5	1	3	2	7	13	62	75
Hydrothorax	0	1	0	2	2	3	0	0	0	0	0	0	0	0	0	0	0	2	1	2	0	0	0	0	3	10	13
Ascites	0	1	1	2	0	0	0	2	0	0	1	0	0	0	0	0	0	2	0	0	2	0	1	2	5	9	14
Hydrocele	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	1
Berriberie	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1	1	3	4
Scrophula	0	0	0	0	0	1	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	1	4	5
Syphilis	0	4	2	5	2	1	3	5	1	4	1	0	1	4	2	3	0	0	1	0	1	2	1	2	15	30	45
Lepra	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	2
Icterus	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	3
LOCALES.																											
Gonorrhæa	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Ischuria	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1
Dysuria	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Aneurisma	1	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	2	3
Bubo	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	2
Luxatio	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Vulnus	1	0	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	1	0	0	2	0	1	2	6	8
Ulcus	0	3	0	5	0	1	0	2	1	1	1	3	1	2	0	2	0	1	0	0	0	2	0	1	3	23	26
Psora	0	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	4	4
Fractura	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Strictura	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ambustio	0	2	0	4	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	7	8
Contusio	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	0	0	0	2	2	3	5
Vermes	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	2
Casus fortuitus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2	2
Demersus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1
Debility	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	2
Felo de se	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Inebrietas	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	0	3	0	3
Œdema	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total Eur. and Nat.	47	167	41	129	50	129	37	232	61	355	85	295	48	128	46	92	51	95	48	96	52	89	40	84	606	1891	2497

DIURNAL TABLES

EXHIBITING THE

ADMISSIONS AND CASUALTIES

FROM

CHOLERA

IN THE

ARMY OF FORT ST. GEORGE,

WITH RELATION TO THE

PHASES OF THE MOON,

rom the beginning of the Year 1818 *to the end of March* 1820,

IN VI PARTS.

EUROPEAN TROOPS.

PART I.

EUR

1

	January.			*February.*			*March.*			*April.*			*May.*			*June.*		
Days of the Month.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases
1	0	0		0	0		0	0		0	0		1	1		0	0	
2	1	0		0	0		0	0		0	0		0	0		0	0	
3	0	0		0	0		0	0		0	0		0	0		2	2	
4	0	0		0	0		0	0		0	0		0	0		1	0	N.
5	0	0		0	0	N. M.	0	0		0	0	N. M.	0	0	N. M.	0	0	
6	0	0		0	0		0	0		1	0		0	0		0	0	
7	0	0	N. M.	0	0		0	0	N. M.	0	0		0	0		0	0	
8	0	0		1	0		0	0		1	0		0	0		1	0	
9	0	0		0	0		0	0		0	0		0	0		0	0	
10	0	0		0	0		0	0		0	0		0	0		1	0	
11	0	0		0	0		0	0		0	0		0	0		0	0	
12	0	0		0	0		0	0		0	0		0	0		0	0	F.
13	0	0		0	0	F. Q.	0	0		0	0		0	0	F. Q.	1	0	
14	0	0	F. Q.	0	0		0	0		0	0	F. Q.	1	0		0	0	
15	0	0		0	0		0	0	F. Q.	0	0		1	1		0	0	
16	0	0		0	0		0	0		0	0		0	0		0	0	
17	0	0		1	0		0	0		0	0		1	1		0	0	
18	0	0		1	0		0	0		1	0		1	0		0	0	F.
19	0	0		0	0		0	0		0	0		2	2		0	0	
20	3	0		0	0		0	0		0	0		1	0	F. M.	1	0	
21	0	0		0	0	F. M.	0	0		0	0	F. M.	2	1		3	0	
22	0	0	F. M.	0	0		0	0	F. M.	0	0		1	1		1	0	
23	0	0		0	0		0	0		0	0		1	1		0	0	
24	0	0		0	0		1	0		0	0		1	1		1	0	
25	0	0		0	0		0	0		0	0		0	0		0	0	L.
26	0	0		0	0		0	0		0	0		0	0		0	0	
27	0	0		0	0		2	0		0	0	L. Q.	0	0	L. Q.	0	0	
28	0	0		0	0	L. Q.	0	0		0	0		0	0		1	0	
29	0	0	L. Q.				1	0	L. Q.	2	0		1	0		0	0	
30	0	0					0	0		1	0		0	0		1	0	
31	0	0					0	0					0	0				
Total.	4	0		3	0		4	0		6	0		14	9		14	2	

PEANS.

18. *Table I.*

July.			*August.*			*September.*			*October.*			*November.*			*December.*		
Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.
0	0		0	0		3	2		2	0		7	3		9	1	
0	0		1	0	N. M.	1	0		1	1		6	1		6	0	
0	0	N. M.	0	0		4	1		2	0		4	1		2	0	
0	0		1	0		2	1		4	0		4	0		2	0	
2	0		2	1		3	0		1	0		2	0	F. Q.	4	0	F. Q.
1	1		2	0		9	0		1	0		6	1		2	2	
9	2		1	0		1	0		0	0	F. Q.	7	0		2	1	
3	2		3	2		0	0	F. Q.	1	1		6	0		1	0	
3	0		2	0	F. Q.	3	2		0	0		7	0		3	0	
7	1		3	1		3	0		0	0		4	0		3	0	
3	1	F. Q.	2	0		5	3		0	0		8	2		1	0	
5	1		1	0		2	1		2	1		5	0		2	0	F. M.
1	0		1	0		2	0		4	0		5	0	F. M.	3	0	
1	1		3	0		2	0	F. M.	2	1	F. M.	7	1		1	0	
2	1		4	3		1	0		10	3		6	1		2	0	
3	1		3	3	F. M.	1	0		16	4		7	1		0	0	
2	1		1	1		2	0		14	0		4	1		1	0	
1	1	F. M.	11	5		1	1		17	1		19	6		1	0	
4	2		11	2		2	2		11	0		23	4		0	0	
3	3		17	5		4	0		3	1		19	2		1	0	
9	6		6	1		33	17		7	2		10	1	L. Q.	1	0	L. Q.
8	3		13	4		24	9	L. Q.	9	0	L. Q.	13	1		1	0	
13	2		15	4	L. Q.	20	6		3	0		6	1		1	0	
7	1		36	8		5	0		10	2		10	0		1	0	
4	2	L. Q.	29	6		12	5		8	0		10	1		1	0	
5	0		21	4		7	3		3	1		8	1		5	0	
2	0		19	6		7	2		4	2		4	0		5	3	N. M.
4	1		23	4		4	1		10	3		9	0	N. M.	9	1	
2	1		21	3		4	0		8	1	N. M.	7	1		6	0	
2	1		14	1		0	0	N. M.	7	1		4	0		1	0	
0	0		12	2	N. M.				14	1		0	0		3	0	
106	35		278	66		167	56		174	26		237	30		80	8	

Total.. 1087 232

DIURNAL TABLES.

EUROPEAN TROOPS.

PART II.

EUR

1

Days of the Month.	January. Attacked.	January. Dead.	January. Phases of the Moon.	February. Attacked.	February. Dead.	February. Phases of the Moon.	March. Attacked.	March. Dead.	March. Phases of the Moon.	April. Attacked.	April. Dead.	April. Phases of the Moon.	May. Attacked.	May. Dead.	May. Phases of the Moon.	June. Attacked.	June. Dead.	June. Phases of the Moon.
1	1	0		1	0		0	0		1	0		1	0		0	0	F.
2	0	0		0	0	F. Q.	0	0		1	1	F. Q.	0	0	F. Q.	0	0	
3	1	0	F. Q.	0	0		0	0		0	0		0	0		0	0	
4	1	0		1	0		0	0	F. Q.	2	2		1	0		0	0	
5	0	0		0	0		0	0		0	0		1	0		0	0	
6	0	0		0	0		0	0		0	0		1	0		0	0	
7	0	0		0	0		0	0		0	0		0	0		1	0	
8	0	0		0	0		1	0		0	0		1	0		2	0	F.
9	0	0		0	0		0	0		0	0		1	0		1	1	
10	0	0		0	0	F. M.	1	0		1	0	F. M.	1	0	F. M.	0	0	
11	0	0	F. M.	0	0		0	0		0	0		3	0		0	0	
12	0	0		1	0		0	0	F. M.	0	0		2	1		1	0	
13	1	1		0	0		0	0		1	0		0	0		1	1	
14	0	0		0	0		0	0		0	0		1	0		1	0	
15	0	0		0	0		0	0		4	2		3	2		0	0	L.
16	0	0		0	0		0	0		4	0		0	0	L. Q.	0	0	
17	0	0		0	0		0	0		3	2	L. Q.	0	0		0	0	
18	0	0		0	0	L. Q.	0	0		7	0		0	0		0	0	
19	0	0	L. Q.	0	0		0	0	L. Q.	21	3		0	0		0	0	
20	0	0		0	0		1	0		18	1		0	0		3	1	
21	0	0		0	0		0	0		6	0		1	0		0	0	
22	0	0		0	0		0	0		9	1		1	0		2	0	N.
23	0	0		0	0		0	0		4	0		0	0		1	1	
24	0	0		1	0	N. M.	0	0		4	0	N. M.	0	0	N. M.	2	0	
25	1	0	N. M.	0	0		1	0		4	0		1	0		2	0	
26	0	0		0	0		0	0	N. M.	1	0		0	0		3	0	
27	0	0		1	0		0	0		0	0		2	0		1	1	
28	0	0		0	0		0	0		0	0		1	1		5	1	
29	0	0					0	0		0	0		0	0		24	4	
30	0	0					0	0		9	0		1	0		21	1	F.
31	0	0					0	0					1	0				
Total.	5	1		5	0		4	0		100	12		24	4		71	11	

PEANS.

19.

Table II.

July.			*August.*			*September.*			*October.*			*November.*			*December.*		
Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.
13	3		1	0		0	0		0	0		2	0		1	0	F. M.
12	3		0	0		0	0		0	0		3	1	F. M.	1	0	
13	2		3	0		1	1		1	0	F. M.	1	0		1	0	
11	0		3	0		0	0	F. M.	0	0		1	0		0	0	
12	2		0	0		0	0		1	1		0	0		0	0	
8	1		1	0	F. M.	1	0		1	0		1	0		0	0	
1	1	F. M.	2	0		0	0		1	0		2	0		0	0	
3	0		0	0		0	0		1	0		1	0		0	0	
8	0		0	0		4	2		0	0		1	0		0	0	
3	2		0	0		0	0		0	0		0	0	L. Q.	0	0	L. Q.
8	3		0	0		2	0	L. Q.	0	0	L. Q.	3	0		1	1	
1	0		1	1	L. Q.	1	1		0	0		0	0		0	0	
3	1		0	0		0	0		0	0		1	0		0	0	
4	1	L. Q.	0	0		0	0		0	0		0	0		0	0	
2	0		0	0		1	1		1	0		0	0		1	0	
1	0		3	0		1	0		1	0		0	0		0	0	
9	3		0	0		1	0		1	0		0	0	N. M.	0	0	N. M.
1	0		0	0		0	0		0	0		0	0		0	0	
1	1		0	0		2	1	N. M.	1	0	N. M.	1	1		0	0	
2	0		15	0		2	0		0	0		0	0		0	0	
1	0		0	0	N. M.	0	0		0	0		1	1		0	0	
6	1	N. M.	0	0		0	0		0	0		0	0		0	0	
5	0		1	0		0	0		0	0		0	0		1	0	
3	1		2	0		1	0		0	0		1	0	F. Q.	1	0	F. Q.
2	0		1	0		0	0		13	11		0	0		1	1	
2	1		2	1		0	0		5	2	F. Q.	0	0		0	0	
1	0		3	0		1	0	F. Q.	3	0		0	0		1	0	
8	1		3	1	F. Q.	1	0		5	1		0	0		0	0	
0	0		0	0		1	0		0	0		0	0		0	0	
1	0	F. Q.	0	0		0	0		4	1		0	0		0	0	
			1	0		0	0		1	0		0	0		0	0	F. M.
155	27		42	3		26	6		40	16		19	3		9	2	
														Total	500	85	

DIURNAL TABLES.

EUROPEAN TROOPS.

PART III.

EURO

18

	January.			February.			March.			April.			May.			June.		
Days of the Month.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.
1	1	0		0	0		2	0										
2	0	0		3	1		1	0										
3	0	0		4	1		1	1										
4	0	0		1	0		0	0										
5	0	0		1	1		1	0										
6	1	1		2	0		0	0										
7	1	0		1	0	L. Q.	1	0										
8	0	0	L. Q.	2	1		1	0	L. Q.									
9	0	0		1	0		2	0										
10	1	0		1	1		0	0										
11	0	0		2	0		0	0										
12	1	1		3	1		1	0										
13	2	1		0	0		1	1										
14	2	1		2	0	N. M.	0	0	N. M.									
15	1	1	N. M.	5	2		0	0										
16	0	0		1	0		2	1										
17	0	0		2	0		0	0										
18	0	0		2	1		3	1										
19	0	0		1	0		0	0										
20	0	0		2	0		0	0										
21	0	0		0	0	F. Q.	0	0	F. Q.									
22	2	1	F. Q.	1	0		1	0										
23	0	0		0	0		0	0										
24	0	0		2	0		1	1										
25	0	0		2	1		0	0										
26	1	0		3	0		1	0										
27	0	0		0	0		0	0										
28	0	0		1	0		2	0										
29	0	0		0	0	F. M.	0	0										
30	0	0	F. M.				0	0	F. M.									
31	1	0					0	0										
Total.	14	6		45	10		21	5		18	4		30	7		53	7	

EANS.

D.

Table III.

July.			August.			September.			October.			November.			December.		
Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.
50	11		35	5		18	4		20	5		27	4		12	1	
														Total..	343	69	

DIURNAL TABLES.

NATIVE TROOPS.

PART I.

NAT

18

	January.			*February.*			*March.*			*April.*			*May.*			*June.*		
Days of the Month.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.
1	0	0		0	0		0	0		0	0		1	1		48	12	
2	2	0		0	0		0	0		1	0		0	0		38	0	
3	0	0		0	0		0	0		3	1		0	0		26	1	
4	0	0		0	0		0	0		3	2		2	0		30	2	N. M.
5	0	0		1	0	N. M.	0	0		2	1	N. M.	4	2	N. M.	11	1	
6	0	0		0	0		0	0		2	1		0	0		22	3	
7	0	0	N. M.	0	0		0	0	N. M.	1	0		0	0		6	0	
8	0	0		0	0		0	0		5	2		1	0		9	0	
9	0	0		0	0		0	0		1	1		2	2		12	2	
10	0	0		1	0		0	0		2	1		1	0		0	0	
11	0	0		0	0		0	0		1	0		1	1		3	0	
12	0	0		0	0		0	0		0	0		1	0		0	0	F. Q.
13	0	0		0	0	F. Q.	0	0		2	0		2	0	F. Q.	0	0	
14	0	0	F. Q.	0	0		1	0		2	0	F. Q.	1	0		2	1	
15	1	0		0	0		1	0	F. Q.	1	1		0	0		1	0	
16	0	0		0	0		0	0		0	0		0	0		5	0	
17	0	0		0	0		0	0		0	0		1	1		2	0	
18	0	0		0	0		0	0		0	0		1	1		1	0	F. M.
19	1	0		0	0		0	0		1	0		0	0		3	0	
20	1	0		0	0		1	1		1	0		1	0	F. M.	6	2	
21	0	0		0	0	F. M.	0	0		0	0	F. M.	0	0		1	1	
22	0	0	F. M.	0	0		0	0	F. M.	0	0		0	0		1	0	
23	0	0		0	0		0	0		0	0		2	1		1	1	
24	0	0		0	0		1	1		2	0		0	0		0	0	
25	0	0		0	0		0	0		0	0		4	0		1	0	L. Q
26	1	0		2	0		2	0		0	0		1	0		16	6	
27	0	0		0	0		3	0		0	0	L. Q.	5	2	L. Q.	0	0	
28	0	0		0	0	L. Q.	2	0		1	1		4	0		1	0	
29	0	0	L. Q.				0	0	L. Q.	4	2		2	0		2	0	
30	0	0					1	0		2	0		1	0		0	0	
31	0	0					0	0					34	13				
Total.	6	0		4	0		12	2		37	13		72	24		248	32	

IVES

8.

Table IV.

July.			*August.*			*September.*			*October.*			*November.*			*December.*		
Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.
2	0		9	0		12	1		3	1		14	7		3	3	
5	1		7	2	N. M.	14	2		1	0		22	10		1	0	
3	2	N. M	6	1		10	4		1	0		22	8		4	2	
5	2		12	6		8	1		1	0		23	14		5	2	
8	3		7	1		6	1		1	0		23	13	F. Q.	6	0	F. Q.
26	9		17	3		8	0		1	0		25	8		3	2	
28	8		10	2		12	2		1	0	F. Q.	27	10		7	1	
30	11		16	1		8	3	F. Q.	0	0		22	7		7	1	
21	4		9	1	F. Q.	9	6		1	0		34	8		8	2	
20	6		9	0		7	2		6	0		39	16		12	3	
9	0	F. Q.	3	0		9	0		1	0		34	10		10	6	
14	5		16	7		8	3		4	0		40	8		7	3	F. M.
15	8		5	0		3	1		2	2		37	9	F. M.	6	2	
25	7		4	1		5	0	F. M.	15	5	F. M.	35	9		7	6	
16	4		14	1		4	0		19	5		24	8		5	0	
23	9		10	1		9	0		7	2		42	16		13	4	
32	14		7	1		4	0		17	4		44	10		9	2	
22	5	F. M.	6	1		6	1		11	0		16	5		2	1	
61	15		14	5		4	0		14	5		19	6		5	1	
9	1		15	4		2	0		7	0		14	6		7	3	
20	7		9	1		5	0		15	7		12	3	L. Q.	7	1	L. Q.
26	2		23	7		2	0	L. Q.	12	3	L. Q.	13	3		7	3	
23	6		13	6	L. Q.	8	1		7	2		16	5		6	0	
6	1		20	5		5	1		8	3		9	3		4	1	
7	2	L. Q.	13	6		4	0		8	1		7	3		7	4	
10	4		7	2		7	0		12	3		10	1		4	1	
11	0		10	7		7	0		7	5		7	0		6	2	N. M.
10	6		8	0		5	1		9	3		5	2	N. M.	3	1	
2	1		21	7		4	2		19	8	N. M.	11	2		4	1	
10	0		13	5		6	0	N. M.	7	1		5	0		4	2	
12	2		18	1	N. M.				7	1					0	0	
511	145		351	85		201	32		224	61		651	210		179	60	
														Total	2496	664	

DIURNAL TABLES.

NATIVE TROOPS.

PART II.

NA

1

	January.			*February.*			*March.*			*April.*			*May.*			*June.*		
Days of the Month.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.
1	4	1		1	0		1	0		6	1		5	3		14	9	F.
2	3	0		3	1	F. Q.	4	2		7	1	F. Q.	4	4	F. Q.	10	2	
3	0	0	F. Q.	2	0		2	2		3	0		12	5		14	1	
4	3	1		1	1		2	0	F. Q.	4	0		10	3		8	2	
5	3	2		2	1		4	1		5	2		15	6		6	3	
6	2	2		3	0		7	1		2	1		13	5		3	1	
7	8	3		0	0		7	2		2	1		14	4		10	1	
8	7	3		3	0		2	0		7	2		7	1		6	1	F. M
9	2	1		4	0		6	4		1	0		11	3		5	1	
10	0	0		5	2	F. M.	2	0		3	0	F. M.	15	3	F. M.	9	2	
11	6	3	F. M.	6	1		12	8		5	2		7	2		6	5	
12	1	0		2	0		9	1	F. M.	2	1		9	1		6	0	
13	4	3		2	1		7	1		10	4		8	0		8	3	
14	9	2		12	3		10	0		14	4		3	1		7	1	
15	12	1		8	0		8	1		8	2		11	3		9	1	L.
16	8	1		4	1		8	3		12	1		9	2	L. Q.	9	2	
17	3	1		1	0		11	8		31	18	L. Q.	7	3		6	1	
18	14	3		3	1	L. Q.	16	6		54	15		15	4		5	3	
19	4	2	L. Q.	10	2		26	6	L. Q.	44	12		8	1		4	1	
20	6	3		9	0		29	10		14	3		8	1		6	0	
21	5	3		6	2		25	11		13	3		8	1		7	1	
22	1	1		3	2		4	2		6	2		10	2		9	2	N.
23	0	0		2	0		15	4		5	0		17	2		14	4	
24	1	1		0	0	N. M.	40	9		7	1	N. M.	9	0	N. M.	6	2	
25	2	1		3	1		15	5		10	4		12	5		5	0	
26	3	1	N. M.	10	3		14	0	N. M.	29	6		20	4		5	1	
27	1	1		0	0		7	2		5	1		11	4		4	0	
28	3	2		5	0		20	5		14	7		14	5		4	1	
29	6	3					8	1		9	1		10	0		5	0	
30	1	0					9	1		5	1		18	1		7	1	F.
31	1	1					5	2					15	6				
Total.	123	46		110	22		330	98		337	96		335	85		217	52	

IVES.

19. *Table V.*

July.			*August.*			*September.*			*October.*			*November.*			*December.*		
Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.
12	4		4	0		0	0		8	6		1	0		16	4	F. M.
6	2		7	0		6	1		3	2		1	1	F. M.	10	5	
9	3		2	1		3	0		5	1	F. M.	3	0		17	7	
10	4		5	1		12	4	F. M.	6	2		2	2		15	6	
5	0		1	0		11	3		4	2		2	0		16	6	
4	3		3	0	F. M.	5	2		2	1		1	0		15	1	
12	4	F. M.	6	2		7	1		3	0		1	0		5	0	
18	5		5	0		9	2		5	3		0	0		11	4	
16	3		7	1		3	0		2	0		1	1		13	4	
18	5		1	0		2	0		1	1		0	0	L. Q.	15	5	L. Q.
16	1		5	2		5	1	L. Q.	1	0	L. Q.	1	1		8	1	
15	5		6	3	L. Q.	1	1		0	0		2	0		16	0	
7	1		4	2		3	0		2	1		6	2		7	3	
10	5	L. Q.	2	0		2	0		3	1		4	0		13	4	
11	1		1	0		5	0		1	0		9	0		10	2	
3	0		1	0		3	2		5	1		4	3		11	4	
9	2		4	1		6	2		1	0		4	2	N. M.	16	6	N. M.
7	0		11	2		2	1		0	0		2	2		10	5	
10	3		12	2		4	1	N. M.	1	0	N. M.	4	2		12	1	
14	2		13	3		3	1		3	1		3	1		24	12	
7	2		21	4	N. M.	3	1		3	1		6	4		18	7	
4	1	N. M.	11	1		3	1		2	1		3	0		21	9	
9	0		6	2		2	0		2	0		16	3		30	15	
5	2		5	3		1	0		3	0		7	4	F. Q.	18	6	F. Q.
3	2		4	3		6	0		2	1		7	3		14	3	
5	0		2	1		2	0		3	0	F. Q.	15	4		11	3	
10	2		10	3		7	2	F. Q.	3	1		7	1		18	4	
10	1		6	1	F. Q.	2	1		2	0		7	1		7	1	
7	1		6	0		4	1		1	0		6	3		8	2	
4	0	F. Q.	9	2		0	0		3	2		19	1		9	2	
3	0		5	0					2	1					6	1	F. M.
279	64		185	40		122	28		82	29		144	41		420	133	
														Total	2684	734	

DIURNAL TABLES.

NATIVE TROOPS.

PART III.

NA

1

	January.			February.			March.			April.			May.			June.		
Days of the Month.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.
1	9	3		13	2		0	0										
2	5	0		12	2		12	2										
3	7	2		4	3		11	2										
4	6	2		13	0		12	2										
5	12	1		11	1		15	5										
6	14	1		17	4		5	1										
7	3	1		16	1	L. Q.	12	1										
8	7	3	L. Q.	15	5		2	1	L. Q.									
9	10	5		22	8		2	0										
10	15	3		13	2		13	2										
11	6	3		7	0		5	2										
12	8	3		7	4		11	1										
13	9	5		14	13		11	3										
14	5	3		12	9	N. M.	2	0	N. M.									
15	11	5	N. M.	19	7		10	1										
16	14	3		12	8		12	2										
17	7	4		13	2		0	0										
18	8	6		16	3		1	1										
19	8	7		11	7		5	0										
20	12	9		13	1		5	1										
21	13	7		5	3	F. Q.	2	1	F. Q.									
22	14	9	F. Q.	14	8		8	0										
23	10	4		18	6		9	2										
24	4	2		16	3		1	0										
25	8	3		13	7		4	1										
26	10	3		4	1		1	0										
27	11	1		6	4		6	4										
28	7	2		4	3		7	1										
29	13	6		3	0	F. M.	2	0										
30	8	0	F. M.				0	0	F. M.									
31	14	2					0	0										
Total.	288	108		343	117		186	36		225	34		437	67		348	100	

IVES.

20.

Table VI.

July.			*August.*			*September.*			*October.*			*November.*			*December.*		
Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.	Attacked.	Dead.	Phases of the Moon.
102	43		251	39		437	43		211	87		246	57		103	27	
														Total..	3178	758	

A

GENERAL TABLE

OF THE

MOVEMENT OF TROOPS

UNDER THE

PRESIDENCY OF FORT ST. GEORGE,

From the beginning of 1815 *to the end of* 1821.

General Table of the Movement of Troops under the Presidency of Fort St. George, during the year 1815.

Table I.

DIVISIONS.	EUROPEANS.				NATIVES.			
	1st Quarter	2d Quarter	3d Quarter	4th Quarter	1st Quarter	2d Quarter	3d Quarter	4th Quarter
Northern	400	0	0	0	1000	4000	2000	250
Centre	1100	0	800	1000	4800	300	3000	500
Southern and Quilon	900	0	0	0	5000	200	1000	250
Mysoor, Malabar, &c.	400	0	0	950	8200	200	250	7300
Ceded Distircts	0	4100	1500	0	150	12200	4000	150
Nizam's Territory Nagpoor	2500	0	1800	1800	800	250	2400	2000

General Table of the Movement of Troops under the Presidency of Fort St. George, during the year 1816.

Table II.

DIVISIONS.	EUROPEANS.				NATIVES.			
	1st Quarter	2d Quarter	3d Quarter	4th Quarter	1st Quarter	2d Quarter	3d Quarter	4th Quarter
Northern	800	800	0	800	2400	3800	2000	3000
Centre	1100	0	800	700	1500	250	1000	1000
Southern and Quilon	0	240	700	2400	2000	250	200	1000
Mysoor, Malabar, &c.	0	1600	1600	1800	2800	6500	2300	4000
Ceded Districts	1000	800	1300	1300	3100	6000	8500	4000
Nizam's Territory	500	800	800	1800	6000	6500	8000	6000
Nagpoor	0	200	200	0	200	6600	6600	5000

General Table of the Movement of Troops under the Presidency of Fort St. George during the Year 1817.

Table III.

DIVISIONS.	EUROPEANS.				NATIVES.			
	1st Quarter	2d Quarter	3d Quarter	4th Quarter	1st Quarter	2d Quarter	3d Quarter	4th Quarter
Northern.............	0	0	0	0	300	6100	6100	3300
Centre...............	710	300	0	0	800	200	300	200
Southern and Quilon...	0	0	0	0	100	150	150	200
Mysoor, Malabar, &c..	1500	0	0	230	1400	200	200	900
Ceded Districts.......	1056	0	0	0	2890	300	200	300
Nizam's Territory.....	1343	2100	2162	2162	5580	10982	12300	12300
Nagpoor and Poonah Territories.......	150	150	60	60	7760	6700	5150	5150

General Table of the Movement of Troops under the Presidency of Fort St. George during the Year 1818.

Table IV.

DIVISIONS.	EUROPEANS.				NATIVES.			
	1st Quarter	2d Quarter	3d Quarter	4th Quarter	1st Quarter	2d Quarter	3d Quarter	4th Quarter
Northern.............	1200	1000	500	0	1300	500	1200	800
Centre...............	800	1000	1800	1600	200	1000	1000	1000
Southern and Quilon...	250	0	0	1000	200	200	200	500
Mysoor, Malabar, &c..	900	800	1800	1800	1000	500	500	200
Ceded Districts.......	400	1800	800	200	1600	1000	1500	800
Nizam's and Nagpoor Territories...	3500	3500	3500	3500	22000	22000	22000	22000

General Table of the Movement of Troops under the Presidency of Fort St. George during the Year 1819.

Table V.

DIVISIONS.	EUROPEANS.				NATIVES.			
	1st Quarter	2d Quarter	3d Quarter	4th Quarter	1st Quarter	2d Quarter	3d Quarter	4th Quarter
Northern	0	0	0	0	1500	3000	3300	1200
Centre	1500	800	1300	1500	800	2200	3500	3000
Southern and Quilon...	0	0	0	1000	2700	1000	1200	3000
Mysoor, Malabar, &c. .	0	0	1300	500	600	500	300	6600
Ceded Districts.......	1000	800	0	0	1900	2300	2000	2600
Nizam's and Nagpoor Territories.......	2500	2000	1000	1000	21000	20000	15000	20000

General Table of the Movement of Troops under the Presidency of Fort St. George during the Year 1820.

Table VI.

DIVISIONS.	EUROPEANS.				NATIVES.			
	1st Quarter	2d Quarter	3d Quarter	4th Quarter	1st Quarter	2d Quarter	3d Quarter	4th Quarter
Northern	50	10	120	210	5910	2350	5770	3240
Centre	1590	1470	1960	210	3430	2800	1740	1320
Southern and Quilon ..	1850	10	350	480	4260	2860	2880	220
Mysore, Malabar, &c..	1510	900	1200	900	6370	6280	5180	3510
Ceded Districts.......	920	510	930	470	2520	2470	2430	3850
Nizam's and Nagpoor Territories	160	1010	470	1260	9550	10070	13790	16010

General Table of the Movement of Troops under the Presidency of Fort St. George during the Year 1821.

Table VII.

DIVISIONS.	EUROPEANS.				NATIVES.			
	1st Quarter	2d Quarter	3d Quarter	4th Quarter	1st Quarter	2d Quarter	3d Quarter	4th Quarter
Northern…………	20	40	100	20	3360	2030	6880	1880
Centre…………	390	240	310	340	4590	3000	5370	1770
Southern and Quilon…	80	140	90	100	5720	3940	2380	2060
Mysore, Malabar, &c..	150	40	90	30	6030	3450	1210	2440
Ceded Districts……	310	30	30	140	6060	7590	2320	590
Nizam's and Nagpoor Territories……	480	120	130	170	10270	9130	6220	1240

A SERIES

OF

METEOROLOGICAL TABLES

FROM

1st JANUARY 1815

TO

THE 31st DECEMBER 1821

KEPT AT THE

MADRAS OBSERVATORY,

IN VII PARTS.

* * *

PART I.

METEOROLOGICAL JOURNAL

KEPT IN THE

MADRAS OBSERVATORY

IN THE YEAR 1815.

January 1815.

Days.	BAROMETER.					THERMOMETER (*exposed to a free Current of air.*)					RAIN GAUGE.				WINDS.	WEATHER, &c.
											Observed.		*Reduced.*			
	Sun rise.	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*Sun rise.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock*	*From Sun set to Sun rise.*	*From Sunrise to Sun set.*	*Sun rise.*	*Sunset.*		
	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.	inches.	inches.		
1	30,108	30,160	30,133	30,110	30,130	70,8	79,0	79,2	76,0	74,6	,,	,,	,,	,,	E. and N. E.	Mostly clear.
2	30,118	30,155	30,120	30,108	30,110	69,0	79,0	78,8	76,0	74,0	,,	,,	,,	,,	N. E.	Mostly clear.
3	30,108	30,155	30,122	30,110	30,118	73,5	79,2	79,2	74,8	74,0	,,	,,	,,	,,	Fresh N. Ey.	Mostly clear.
4	30,120	30,140	30,118	30,110	30,120	73,8	79 0	78,8	78,8	75,2	,,	,,	,,	,,	Calm & N. E.	Flying clouds.
5	30,108	30,123	30,077	30,064	30,078	73 0	77,5	77,5	75,7	74,0	,,	,,	,,	,,	N. Easterly.	Flying clouds.
6	30,100	30,020	30,064	30,070	30,110	71,8	78,7	79,2	70,0	75,0	,,	,,	,,	,,	N. E.	Flying clouds.
7	29,988	30,136	30,140	30,110	30,150	71,0	79,8	79,2	76,0	75,2	,,	,,	,,	,,	N. E.	Flying clouds.
8	30,115	30,175	......	30,110	30,120	69.8	78,2	....	75,5	75,0	,,	,,	,,	,,	N. E.	Flying clouds.
9	30,130	30,158	30,110	30,110	30,120	71,0	80,2	79.0	77,0	74,5	,,	,,	,,	,,	N. E.	Flying clouds.
10	30,130	30,140	30 085	30,046	30 130	72.0	79,2	79 5	75,6	74,0	,,	,,	,,	,,	N E.	Flying clouds.
11	30,118	30,158	30,094	30,120	30,133	68,2	78,6	78,4	76,0	74,3	,,	,,	,,	,,	N. E.	Flying clouds, dew, and comparatively cold.
12	30,100	30,128	30 008	30 058	30,078	67,2	79.2	79.0	76,0	74,5	,,	,,	,,	,,	N. E.	Flying clouds.
13	30,100	30,008	30,007	30,043	30,060	69,0	79,0	79.5	76 0	75.2	,,	,,	,,	,,	N. E.	Flying clouds.
14	30,066	30,108	30,066	30,044	30,080	68,5	79,5	79,5	76,4	74,0	,,	,,	,,	,,	N. E.	Flying clouds, dew, and cold weather for Madras.
15	30,045	30,110	30 064	30,068	30,100	70,7	79 8	80,2	76.5	76.0	,,	,,	,,	,,	N E.	Mostly clear, dew at night.
16	30,110	30,040	30,100	30,110	30,138	71,0	79,2	79.0	76.2	78,5	,,	,,	,,	,,	N. E.	Mostly clear.
17	30,160	30,100	30,133	30,110	30,138	66 2	79,7	80,0	76.0	74,3	,,	,,	,,	,,	N. E.	Mostly clear.
18	30,170	30,100	30,140	30,138	30.158	68,0	78 8	79,0	76,0	74,5	,,	,,	,,	,,	Easterly.	Flying clouds.
19	30,135	30,178	30,146	30,126	30 160	69,0	79.8	80,5	78,0	76.0	,,	,,	,,	,,	N. E.	Flying clouds.
20	......	30 100	30,140	30,144	30 200	....	79,8	80,2	76,5	75,5	,,	,,	,,	,,	N. E.	Flying clouds.
21	30,158	30.150	30,130	30,122	30,124	70,0	76,2	75,5	74 5	74.4	,,	2,4	,,	0,6	N. E.	Cloudy and some rain.
22	30,118	30,138	......	30 065	30,064	75,0	79,5	....	77,7	77,4	3.7	,,	0,9¼	,,	N. E.	Cloudy.
23	30,100	30,116	30 066	30 048	30,100	75.2	78,3	79,0	77,8	77,0	0,5	,,	0,1¼	,,	N. E.	Flying clouds.
24	30.040	30 067	30,040	30.030	30,035	73,3	80.6	80,2	78,0	77,0	,,	,,	,,	,,	N. E.	Flying clouds.
25	30.060	30,110	30,066	30 044	30,060	71,0	79,5	79 8	78,5	72.2	,,	,,	,,	,,	N. E.	Flying clouds.
26	30,064	30,110	30 088	30,050	30.100	69,0	79,5	79 8	78.2	74.5	,,	,,	,,	,,	N. E.	Flying clouds.
27	30,050	30,077	30,034	30 033	30,040	68,3	79,2	79 8	78 0	75,5	,,	,,	,,	,,	N. E.	Flying clouds.
28	30,020	30,180	29,968	29 960	30.000	68 0	79 5	80,0	79.0	76,0	,,	,,	,,	,,	N. E.	Mostly clear, heavy dew at night.
29	30 004	30,022	30 000	29,954	30.000	70,5	80,4	81,2	78.0	77,7	,,	,,	,,	,,	S. E.	Clear.
30	30.010	30.100	30,045	30,020	30,070	71,5	82,0	83,5	79.0	77 2	,,	,,	,,	,,	S. E.	Clear.
31	30,100	30,110	30,008	30,054	30,100	71,5	83,3	83,8	80,0	79,5	,,	,,	,,	,,	S. E.	Clear. The weather cool and pleasant all the month.

	Barometer,	Thermometer.
Greatest Height....	30.200	83.8
Least Height.......	29.954	66.2
Mean.............	30.077	75,0
Extreme Difference.	00,246	17,6

Rain Inches.

Observed..6,6..Reduced..1,6½

PHASES OF THE MOON.

	D	H.	M.
Last Quarter....................	2	8	13 A.
New Moon......................	10	7	18 A.
First Quarter....................	18	9	23 A.
Full Moon.......................	25	3	8 A.

In this Month

The Moon had receded to the greatest distance on the 11th.
The nearest approach of the Moon to the Earth was on the 25th.

February 1815.

Days.	BAROMETER.					THERMOMETER (exposed to a free Current of air.)					RAIN GAUGE.				WINDS.	WEATHER, &c.
											Observed		Reduced.			
	Sun rise.	Noon.	2 o'clock.	Sun set.	9 o'clock.	Sun rise.	Noon.	2 o'clock.	Sunset.	9 o'clock	From Sun set to Sun rise	From Sun rise to Sun set.	Sun rise.	Sun set.		
	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.	inches.	inches.		
1	30,100	30,130	30,077	30,078	30,100	71,8	83,5	84,4	79,2	75,5	"	"	"	"	Variable.	Clear, mostly---dew.
2	30,100	30,120	30,045	30,030	30,070	75,0	84,0	85,0	79,0	77.5	"	"	"	"	S. E.	Mostly clear.
3	30,100	30,105	30,044	30,038	30,075	74,0	83,0	83,2	79.0	77.0	"	"	"	"	S. E.	Clear.
4	30,034	30,050	29,982	30,000	30,015	73,0	83,0	82,7	77,8	74,5	"	"	"	"	S. E.	Clear.
5	30,020	30,010	30,107	30,000	30,100	72,6	83,8	83,5	80,0	77,6	"	"	"	"	N. E.	Clear.
6	30,033	30,044	30,010	30,000	30,010	72,5	85,2	89 2	79,0	78,0	"	"	"	"	S. E.	Clear---dews in the morning.
7	30,008	30,020	30,033	29,960	29,970	74,0	84,0	85,0	80,0	79,5	"	"	"	"	S. E.	Clear and dew at Sun rise, wind still inclining to the Southward.
8	29,914	29,960	29,914	29.918	29,910	76,0	84,5	83,6	80,0	79.5	"	"	"	"	S. E.	Mostly clear---dew at night.
9	29,934	30,000	29,950	29,944	29,955	74,8	84,4	84,2	80,0	79,8	"	"	"	"	S. E.	Mostly clear.
10	29,977	30,077	30,028	29,928	29,938	74.0	84,5	84,4	80,0	79,8	"	"	"	"	S. E.	Mostly clear.
11	30,005	29,978	30,055	30,022	30,040	75,5	86,0	85 5	80,8	80,0	"	"	"	"	S. E.	Mostly clear.
12	30,030	30,055	30,020	30,000	30,000	77,0	85,0	85,0	80,4	79,3	"	"	"	"	S. E.	Mostly clear.
13	30,005	30,000	29,955	29,934	29,955	73,8	84,5	85,0	80,5	80,0	"	"	"	"	S. E.	Clear and dew.
14	29,934	29,998	29,930	29,910	29,930	77,0	84,0	86,0	81,0	80,3	"	"	"	"	S. E.	Clear, the weather still cool and pleasant.
15	29,938	29,970	29,945	29,920	30,000	78,0	81,6	83,0	82,2	81,0	"	"	"	"	S. E.	Hazy.
16	29,980	30,040	29,988	30,000	30,040	80,0	84.8	83,5	80,8	80,0	"	"	"	"	S. E.	Cloudy.
17	30,050	30,000	30,032	30,044	30,050	80,5	86,0	85,8	82,0	80,0	"	"	"	"	S. E.	Cloudy.
18	30,030	30,055	30,015	30.010	30,038	80,0	85,5	85.0	82,0	80.0	"	"	"	"	S. E.	Clear---dew.
19	30,000	30,010	29,955	29,944	29,965	70,4	84,0	85,5	81,8	78,8	"	"	"	"	S. E.	Clear.
20	29,955	30,000	29,955	29,945	29,9 .5	75,0	85,8	85,0	81,0	80,0	"	"	"	"	Calm & S. E.	Hazy.
21	29,938	30,010	30,000	29,945	29,970	77,0	86,4	85,5	82,4	80,8	"	"	"	"	Calm and variable.	Hazy.
22	29,944	29,978	29,955	29,928	29,940	81,0	87,0	87,0	83,0	81,0	"	"	"	"	Calm & S. E.	Hazy.
23	29,927	29,960	29,912	29,910	29,910	78,0	87,0	87,2	83,0	81,5	"	"	"	"	Calm & S. E.	Clear and hazy---dew.
24	29,900	29,915	29,918	29,900	29,910	72,0	86,0	87,0	83,0	80.8	"	"	"	"	Calm & S. E.	Clear and hazy.
25	29,878	29,940	29,935	29,918	29,924	72.7	86,0	86,3	80,8	81,0	"	"	"	"	S. E.	Cloudy and clear.
26	29,900	29,955	29,940	29,933	29,940	76,3	85,5	85,7	83.0	82.0	"	"	"	"	S. E.	Flying clouds.
27	29,930	29,954	29,944	29,922	29,973	77,0	88,0	87,5	83,0	82,4	"	"	"	"	Calm & S. E.	Hazy.
28	29.955	30,024	29,970	29,962	29,968	76,0	86,6	85 5	82.0	79,4	"	"	"	"	S. E.	Clear.

	Barometer.	Thermometer.
Greatest Height.....	30,130	89,2
Least Height......	29 878	70 4
Mean.............	30,004	79.8
Extreme Difference...	00,252	18,8

PHASES OF THE MOON.

	D.	H.	M.	
Last Quarter........	1	10	23	M.
New Moon..........	9	2	52	A.
First Quarter........	17	10	5	M.
Full Moon..........	24	1	37	M.

In this Month

The Moon had receded to the greatest distance on the 7th.
The nearest approach of the Moon to the Earth was on the 22d.

March 1815.

Days.	BAROMETER.					THERMOMETER.					RAIN GAUGE		WINDS.	WEATHER, &c.
	Sun rise.	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock*	*Sun rise.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*From Sun set to Sun rise.*	*From Sun rise to Sun set.*		
	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	29 938	29,973	29,956	29 924	29,925	77,6	86,0	86,2	81,4	80,4	,,	,,	S. Easterly.	Clear and dew at night.
2	29,970	29,955	29 928	29 878	29,878	72,0	88,0	87,2	81.5	80,8	,,	,,	S. E.	Clear.
3	29,900	29.945	29 900	29,854	29 900	75.0	87,0	86,6	82 0	80,5	,,	,,	S. E.	Clear---dew.
4	29,888	29.920	29,847	29.834	29,855	75 0	89.2	87,0	82,7	81.0	,,	,,	Fresh S. E.	Clear.
5	29,866	29.916	....	29.824	29 866	74 5	86.6	.....	82,7	81,4	,,	,,	Fresh S. E.	Clear.
6	29,880	29.955	29.910	29,880	29 900	75,5	87,7	87.0	82,0	80.0	,,	,,	South.	Clear.
7	29,910	30,000	29,925	29,926	29,937	75,0	88 2	87,7	82,0	82,0	,,	,,	South.	Clear.
8	29.964	29 998	29,926	29.895	29,944	74,5	88,4	88,0	83,0	80,0	,,	,,	S E. Wind.	Clear.
9	29 912	29 945	29.900	29 920	29,922	75,5	88.0	90.0	82,0	80,6	,,	,,	S. E Wind.	Clear.
10	29.920	29,977	29,925	29,922	29.965	73 3	87,0	86,7	81.0	80,2	,,	,,	S. E. Wind.	Clear.
11	29,935	30,030	29,966	29 954	29 967	73,0	86 8	85,0	80.7	79 2	,,	,,	S. E.	Hazy.
12	29,970	30,032	30,000	29.955	30.000	70,0	86 5	86,0	80 7	73,0	,,	,,	S. E.	Clear.
13	30,010	30,040	30.015	30,000	30,014	70 0	87.6	87.0	80,0	80.0	,,	,,	S. E.	Clear.
14	30,024	30,100	30,044	30,024	30,040	73 5	87,7	86 6	80 7	81,0	,,	,,	S. E.	Clear---dew almost every night lately.
15	30,074	30,100	30,084	30.033	30,050	73,5	87.0	87.2	83.0	82,0	,,	,,	S. E.	Clear.
16	......	30,100	30,088	30,034	30.050	.....	87.6	87.0	83.7	81,7	,,	,,	S E.	Clear.
17	30,033	30,088	30,024	30.015	30 035	73.0	88,8	87,7	84 0	82,0	,,	,,	S. E.	Clear.
18	30 012	30 088	29,958	29,935	29,957	78,7	88,0	85 6	82 7	81,5	,,	,,	S. E.	Clear---dews.
19	29 966	29.988	30,000	29 935	29.955	70,2	89,2	89 0	83,0	82,0	,,	,,	S. E.	Clear.
20	29.977	30 065	30,024	29.974	30,020	75,0	88.0	87.4	83,7	82 0	,,	,,	S. E.	Clear.
21	30,000	30.044	30,023	30.000	30,040	76,0	88,0	88,5	83,0	82,0	,,	,,	S. E.	Clear.
22	30,022	30,077	30,030	29.976	30.012	77,0	87,2	87 0	83,2	81,4	,,	,,	S. E.	Clear.
23	30 000	30.055	29.988	29 972	30,000	76.7	87.8	87,0	82,7	81.0	,,	,,	S. E.	Clear.
24	30,010	30,045	30,018	29.984	30,010	77,0	87,3	86.6	83,6	81.0	,,	,,	S. E.	Clear.
25	30,020	30,100	30.060	30,035	30,075	77,8	88 8	87,8	85,5	84 0	,,	,,	S E.	Clear.
26	30,050	30.100	30 040	30,015	30 018	77,0	89.2	88.5	84,7	82,5	,,	,,	S E.	Clear.
27	30,050	30,077	30,078	30.034	30,070	76.0	88,2	88 5	85,0	83,2	,,	,,	S. E.	Mostly clear---heat much increased.
28	30,000	30,067	30,035	30,000	30,030	74 5	87,0	87,7	83,0	81,7	,,	,,	S. E.	Hazy.
29	30.025	30.082	30,000	30 000	30,015	77,0	88.0	87,0	83,0	81,5	,,	,,	S. E.	Clear.
30	30.017	30,040	30,035	29,984	29 988	75,0	88.0	87.0	84,0	83,0	,,	,,	S. E.	Clear.
31	30 010	30,066	30,036	29,984	30,000	74,0	89,0	88,0	85,0	83,3	,,	,,	S. E.	Cloudy and distant lightning.

	Barometer.	Thermometer.
Greatest Height....	30.100	90 0
Least Height......	29 324	70,0
Mean.............	29 962	80,0
Extreme Difference.	00.276	20,0

PHASES OF THE MOON.

	D.	H.	M.
Last Quarter....................	3	3	29 M.
New Moon......................	11	8	42 M.
First Quarter....................	18	7	40 A.
Full Moon......................	25	11	58 M.

In this Month

The Moon had receded to the greatest distance on the 6th.

The nearest approach of the Moon to the Earth was on the 22d.

April 1815.

Days.	Barometer.					Thermometer (exposed to a free Current of air.)					Rain Gauge.		Winds.	Weather, &c.
	Sun rise.	Noon.	2 o'clock.	Sun set.	9 o'clock.	Sun rise.	Noon.	2 o'clock.	Sun set.	9 o'clock.	From Sun set to Sun rise.	From Sun rise to Sunset.		
	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	29,984	30 020	29 955	29,978	29.988	83,0	89,2	86,6	84,0	83,0	,,	,,	S. Easterly	Hazy, thunder and lightning.
2	29 999	29 987	29 955	29,888	29 910	79,2	90,0	89,0	80 0	80,0	,,	,,	S. E.	Hazy, thunder and lightning.
3	29 944	29,966	29 910	29,870	29 900	80.5	89 8	89.8	85,0	84,5	,,	,,	S. E.	Mostly clear.
4	29.910	29,970	29 930	29.900	29 910	80,5	88,5	89,2	85,5	84,4	,,	,,	S. E.	Clear.
5	29 933	29,965	29,968	29.900	29,918	82,5	89,5	88.8	85,0	84,5	,,	,,	S. E.	Mostly clear.
6	29,933	30,000	30,010	29.900	29,920	83,6	90,0	89 5	86,0	85,5	,,	,,	S. E.	Clear and hot, some lightning.
7	29.988	30,000	29,955	29 930	30,000	82,5	89 6	89,4	85,5	85,0	,,	,,	S. E.	Clear and hot, some lightning.
8	29 970	30,000	.. . .	29 933	29 960	82,0	93 0	.....	85,0	84,5	,,	,,	S. E.	Mostly clear.
9	29 988	30,000	29,946	29 945	29 950	79,5	90 4	89,6	84.8	84,0	,,	,,	S. E.	Clear.
10	29,910	29,965	29,918	29,900	29,930	80,2	92.0	90,2	85,0	84,0	,,	,,	S. E.	Clear, and the weather hot.
11	29,945	29,935	29 844	29,858	29.870	80,0	98,0	92,7	87,7	87,0	,,	,,	S. E.	Clear and hot.
12	29,834	29,918	29.845	29 834	29 880	82,0	95,0	92,5	87,7	85,0	,,	,,	S. E.	Clear and hot.
13	29.888	29,935	29,868	29,824	29 850	83,0	96,0	94,0	88,0	85,6	,,	,,	S. E.	Clear.
14	29,900	29.935	29,900	29.844	29,900	82,0	90 9	90,0	85,5	84,0	,,	,,	S. E.	Clear.
15	29.910	29 934	29,900	29,888	29,900	82.5	90,2	89,8	86,0	85,4	,,	,,	Calm and S. E.	Clear.
16	29,900	29,918	29.888	29,827	29,866	80,6	94,2	90,0	85,2	85.0	,,	,,	S. E.	Clear.
17	29,888	29,910	29,847	29,828	29.865	81,0	91,0	90 0	85,7	84,2	,,	,,	Fresh S. E.	Clear.
18	29 868	29,886	29,835	29,800	29,830	83 0	91 0	89,0	85,4	82.8	,,	,,	Strong S. E.	Clear.
19	29,835	29,850	29,835	29,800	29 840	80,8	91 5	89,2	85,0	84,5	,,	,,	Strong S. E.	Clear.
20	29,800	29 888	29,846	29,784	29.830	82,0	89,0	88,8	85.0	84,0	,,	,,	S. E.	Clear.
21	29.866	29,900	29.888	29,845	29,925	83,0	89,5	88 0	84,2	83.0	,,	,,	S. E.	Day clear, a thick haze at night.
22	29,914	29,945	29,910	29,900	29 920	81,8	90.5	89,8	85,0	84 0	,,	,,	S. E.	Clear.
23	29.924	29 966	29 912	29.888	29,915	80,0	90,2	89.7	84,5	83,0	,,	,,	S. E.	Clear.
24	29 900	29,960	29,916	29,900	29.918	80,5	90,2	90,0	89,8	87,7	,,	,,	S. E.	Clear.
25	29,940	29,978	29,912	29,900	29.930	80,7	90,5	90.5	85 0	84,0	,,	,,	S. E.	Clear.
26	29,955	29 915	29,900	29 872	29,900	80,0	90.4	89,8	85.2	83,2	,,	,,	S. E.	Clear.
27	29,920	29,933	29.900	29 888	29,888	81,4	93,2	91,0	85,5	84,0	,,	,,	S. E.	Clear.
28	29 900	29,904	29,833	29 828	29,837	81,5	89,8	89 0	84,4	84.0	,,	,,	Fresh S. E.	Clear.
29	29,866	29 880	29.888	29,835	29,900	81,5	89.2	89,0	85,0	84,5	,,	,,	Fresh S. E.	Clear.
30	29,905	29,934	29 880	29.845	29.900	79,7	90,0	90,0	84,5	84,0	,,	,,	Fresh S. E.	Clear.

	Barometer.	Thermometer.
Greatest Height ...	30,020	98,0
Least Height.......	29 784	79,2
Mean.............	29.902	83.6
Extreme Difference..	00,236	18,8

PHASES OF THE MOON.

	D.	H	M.	
Last Quarter..................	1	10	28	A.
New Moon..................	9	11	41	A.
First Quarter..............	17	2	42	M.
Full Moon................	23	10	38	A.

In this Month

The Moon had receded to the greatest distance on the 3d.

The nearest approach of the Moon to the Earth was on the 18th.

May 1815.

Days.	BAROMETER.					THERMOMETER (*exposed to a free Current of air.*)					RAIN GAUGE.		WINDS.	WEATHER, &c.
	Sun rise.	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*Sun rise.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*From Sun set to Sun rise.*	*From Sun rise to Sun set.*		
	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	29 924	29 950	29,920	29.887	29,910	80,4	90,7	89,8	85,2	84,0	,,	,,	Fresh S. Easterly	Clear.
2	29,905	29.933	29.900	29.888	29,900	80,5	89,8	89.0	86,0	84,5	,,	,,	Calm snd S. E.	Clear.
3	29,914	29 925	29.905	29.900	29,910	82 0	90.5	90,0	85,0	84,5	,,	,,	Calm and S. E.	Clear.
4	29,878	29 886	29,900	29,788	29 815	80 0	94,5	84,6	84,8	84.6	,,	,,	Calm and S. E.	Clear and hot.
5	29 815	29 888	29,900	29 860	29 870	82 5	94,4	94,0	85 6	84 5	,,	,,	S. E.	Clear,---the heat considerable.
6	29 835	29.877	......	29 865	29.900	82,0	93,3	....	85,5	85,0	,,	,,	Calm and S. E.	Clear.
7	29,910	29 938	29,920	29,900	29,928	81,4	89,2	89,0	86,0	86,0	,,	,,	Calm and S. E.	Hazy.
8	29,900	29 954	......	29 835	29,845	82.2	94,8	....	85 5	85.0	,,	,,	S. E.	Clear.
9	29,833	29,867	29,838	29,800	29,822	82 0	97,5	94,2	87,0	86,0	,,	,,	Land and S. E.	Clear.
10	29,834	29,838	29,840	39,880	29 855	83,0	96,5	96,0	89 0	86,5	,,	,,	Land and S. E.	Clear.
11	29,823	29,818	29 800	29,788	29,788	82,0	98,5	96,0	89,5	87.6	,,	,,	S. E.	Clear.
12	29,835	29,835	29,830	29,814	29.800	83,0	97.7	96,0	90,8	89,0	,,	,,	Land and S. E.	Clear.
13	29.850	29 880	29,855	29,845	29 846	86,0	99,2	98,0	88,0	87,0	,,	,,	Land	Clear.
14	29,837	29 885	29,825	29,885	29.884	83,5	99 5	95 6	91,0	91,0	,,	,,	Variable.	Mostly hazy.
15	29,855	29,910	29,900	29,845	29,850	85,0	99,0	96,5	86,0	85,5	,,	,,	Land and S. E.	Heat oppressive.
16	29,878	29,915	29 835	29,825	29,850	83.0	95,0	93,0	85,5	85,0	,,	,,	Land and S. E.	Clear.
17	29,870	29 916	29,868	29,824	29,868	85 0	95,2	94 5	89,0	88,0	,,	,,	Land and S. E.	Clear.
18	29,858	29,857	29,850	29,815	29,845	83,0	100.2	96,2	88.0	87.5	,,	,,	Land and S. E.	Clear.
19	29 800	29,835	29,810	29,800	29,845	85,5	101,6	104,5	94,6	94 5	,,	,,	Hot Land Wind.	Clear generally. Hazy at times. Extremely hot.
20	29,828	29,868	29,855	29,800	29,840	86,8	98,0	97,8	89,0	87,0	,,	,,	Hot Land Wind.	Clear.
21	29,837	29 844	29,822	29,800	29 822	86,5	98.3	97,0	87,5	85,0	,,	,,	Hot Land & S. E.	Clear.
22	29,833	29.878	29 840	29,815	29,835	83,0	97,0	100,8	89,0	86,5	,,	,,	Hot Land.	Hazy.
23	29,800	29,822	29,815	29,766	29 800	83,0	97,2	97,8	87,0	85,0	,,	,,	Hot Land.	Clear.
24	29.800	29,810	29,810	29.800	29,824	83,5	96,8	94,9	86.0	85,0	,,	,,	Land.	Clear.
25	29 840	29 868	29,830	29 822	29,856	83,2	95 6	95,0	89,0	88,5	,,	,,	Land.	Clear.
26	29.855	29,925	29.900	29 847	29 850	82 5	94,0	90.8	85,5	85 0	,,	,,	Land and S. E.	Hazy.
27	29 834	29 855	29,818	29 800	29.830	83,0	94 5	93,5	90.0	87,7	,,	,,	Land.	Mostly cloudy.
28	29 788	29 828	......	29,768	29,820	83,0	95 0	....	87,0	86,0	,,	,,	Land.	Flying clouds.
29	29 800	29,815	29,788	29.755	29.800	86.6	96 6	97,0	87,0	87 0	,,	,,	Land and S. E.	Lightning in the N. W. and S. W. Qrs.
30	29 778	29,800	29.788	29 758	29,800	84,0	96,2	95,0	87.0	85 0	,,	,,	Land and S. E.	Flying clouds, lightg. in the S.W. and N.W. Qrs.
31	29 758	29 815	29,810	29 778	29 828	83,2	95,5	96,4	85.8	85,0	,,	,,	Land and S E.	Clear.

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height....	29 954	104 5
Least Height.......	29 755	80 0
Mean..............	29 8545	92.25
Extreme Difference.	00.199	02 45

PHASES OF THE MOON.

	D.	H.	M.	
Last Quarter................	1	5	38	A.
New Moon...................	9	11	41	M.
First Quarter................	16	8	8	M.
Full Moon..................	23	10	18	M.
Last Quarter................	31	11	25	M.

In this Month

The nearest approach of the Moon to the Earth was on the 14th;
The Moon had receded to the greatest distance on the 29th.

June 1815.

Days.	Barometer.					Thermometer (*exposed to a free Current of air.*)					Rain Gauge.		Winds.	Weather, &c.
	Sun rise.	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*Sun rise.*	*Noon.*	*2 o'clock.*	*Sunset.*	*9 o'clock*	*From Sun set to Sun rise.*	*From Sun rise to Sun set.*		
	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	29.810	29,815	29.818	29 835	29,838	84.4	85 8	97.5	87,2	87,0	,,	,,	S. E.	Mostly clear.
2	29.800	29,848	29.833	29 800	29,815	83 0	87,2	86,0	86,0	85.6	,,	,,	Land and S. E.	Flying clouds—the heat considerable.
3	29,840	29,868	29,820	29,810	29,855	81,2	93,5	89.8	86,0	86,0	,,	,,	S. E.	Hazy.
4	29,838	29,858	29 818	29.778	29 818	83.0	93,3	91,0	86,0	85.0	,,	,,	S. E.	Flying clouds.
5	29,800	29,820	29 800	29.758	29,788	82,0	91,5	91,5	86,0	86.0	,,	,,	S. E.	Flying clouds.
6	29,800	29,825	29 788	29,730	29 800	83.0	96,0	90.0	85,0	85.0	,,	,,	Land.	Mostly clear.
7	29,810	29,833	29,774	29,787	29 810	82,0	95,2	97,0	86,8	88,0	,,	,,	Land.	Generally cloudy.
8	29.888	29,878	......	29,800	29.845	83.0	95,5	....	91,5	88 8	,,	,,	S. E.	Cloudy and a little rain.
9	29,855	29.865	29,810	29 770	29 842	82.5	94,8	97,8	86,0	87,0	,,	,,	S E.	Cloudy and some rain—thunder and lightning.
10	29 842	29,838	29.810	29 865	29.765	86 4	89,6	92,0	86 0	86.5	,,	,,	Land.	Cloudy.
11	29.818	29.842	29,832	29,786	29.845	82 0	93,0	95,0	88,6	86,7	,,	,,	Land	Cloudy.
12	29.855	29 780	29.845	29 815	29 865	83 7	95,0	96 4	86,0	88 5	,,	,,	Land and S. E.	Clear.
13	29,874	29,786	29.842	29 815	29,844	81,5	95 0	97,5	87,2	85.0	,,	,,	Land.	Hazy.
14	29 852	29,875	29 835	29 800	29.840	82.0	94,4	93,0	85,7	85,0	,,	,,	Land and S. E.	Hazy.
15	29 826	29,876	29,842	29.815	29,866	82,7	93 0	95,4	86,4	86,4	,,	,,	Land.	Flying clouds.
16	29.867	29,816	29,884	29.864	29,784	82 0	90,2	92,0	92,2	91,0	,,	,,	Land.	Hazy.
17	29,882	29.918	......	29.888	29,890	84,2	93,0	....	82,0	83.5	,,	,,	Land.	Clear.
18	29.860	29,900	29,855	29,848	29.855	82,0	92,5	93,0	85,0	84.5	,,	,,	Land and S. E.	Hazy.
19	29.856	29,915	29 888	29.845	29 868	82,0	92,5	90,0	84,0	83 5	,,	,,	Land.	Hazy, and some rain at night.
20	29.900	29 925	29.900	29,845	29.855	78,0	87,2	89,2	83,0	83,0	,,	,,	S. E.	Hazy—lightning in the N. W. Quarter.
21	29.876	29.900	29.868	29,825	29.835	74,0	82,8	83,0	82,0	81,0	,,	,,	Calm.	Cloudy—lightning in the S. W. Quarter.
22	29.825	29 830	29.818	29 814	29,826	79,0	89,8	88,0	79,4	82.5	,,	,,	S. E.	Cloudy and rain, thunder and lightning.
23	29,840	29,878	29,844	29,800	29,818	77.7	87.5	90,5	85,0	82,5	,,	,,	Land.	Hazy and some rain.
24	29,838	29,855	29 818	29,800	29,824	80,0	89,0	93.0	83.0	84.4	,,	,,	Land and S. E.	Hazy.
25	29.858	29.833	29.808	29,866	29.810	81,2	91,4	93.5	85,0	83,4	,,	,,	Land.	Hazy.
26	29,800	29.838	29,815	29,800	29.840	80,5	87,4	88,0	83,8	84,0	,,	,,	Land.	Cloudy.
27	29,810	29.868	29 870	29 815	29,830	80,0	78.5	79.8	79,5	88,8	,,	,,	Calm.	Cloudy and rain.
28	29,855	29,840	29.845	29.800	29 820	79,0	87,0	86 5	83,0	83,2	,,	,,	S. E.	Hazy.
29	29 830	29,880	29 840	29.808	29.815	79,0	87,5	87,8	84,0	83,2	,,	,,	S. E.	Clear.
30	29,815	29,844	29,800	29,766	29,818	80,0	89,0	90.0	85,0	83,0	,,	,,	Variable.	Hazy.

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height.....	29.925	97,8
Least Height.......	29,730	74.0
Mean..............	29 8275	85,9
Extreme Difference...	00,195	23,8

PHASES OF THE MOON.

	D.	H	M	
New Moon..........	7	9	14	A.
First Quarter........	14	1	14	A.
Full Moon..........	21	11	21	A.
Last Quarter........	30	3	2	M.

In this Month

The nearest approach of the Moon to the Earth was on the 10th.

The Moon had receded to the greatest distance on the 26th.

July 1815.

Days.	BAROMETER. Sun rise.	BAROMETER. Noon.	BAROMETER. 2 o'clock.	BAROMETER. Sun set.	BAROMETER. 9 o'clock.	THERMOMETER (exposed to a free Current of air.) Sun rise.	THERMOMETER Noon.	THERMOMETER 2 o'clock.	THERMOMETER Sun set.	THERMOMETER 9 o'clock.	RAIN GAUGE. From Sun set to Sun rise.	RAIN GAUGE. From Sun rise to Sun set.	WINDS.	WEATHER, &c.
	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	29,810	29,815	29,800	29,748	29,768	80,0	92.6	87,8	78,0	80,0	,,	4,2	S. E.	Cloudy and rain.
2	29,777	29,800	29,766	29,748	29,777	78 8	89,8	88,0	78,0	82,0	,,	,,	Land or Wy.	Hazy.
3	29,820	29,830	29,810	29,778	29,800	79,0	90,5	87,0	84.0	84,0	,,	,,	S. E.	Hazy.
4	29,833	29.888	29,824	29,815	29,825	83,0	90,4	92,0	85,0	84,5	,,	,,	Land.	Hazy.
5	29,860	29,900	29,844	29,885	29,870	81,0	91,0	89,5	84,5	84,0	,,	,,	S. E.	Flying clouds.
6	29,818	29,835	29,840	29,766	29,833	83,0	91,8	90,8	83,5	83,0	,,	,,	Land.	Cloudy and rain.
7	29,700	29,844	29,828	29 800	29,835	78,0	85,5	87,6	82,5	82,0	6,6	,,	Land.	Hazy.
8	29,820	29,858	29,830	29,808	29,830	78,0	87,5	91,2	84,2	84.0	,,	,,	Land.	Hazy.
9	29.800	29,838	29,810	29,784	29,800	80,5	89,5	91,5	84 0	84,0	,,	,,	Land.	Hazy.
10	29,800	29,810	29,768	29,750	29,800	80,0	90,8	88,0	83,6	84,2	,,	,,	S. E.	Clear.
11	29,778	29,800	29,748	29,744	29,768	80,5	91,0	89,4	84,0	84,4	,,	,,	Land.	Hazy.
12	29,778	29,800	29.800	29,766	29,810	81,0	88,2	89,0.	85,0	84,0	,,	,,	Land.	Hazy.
13	29,800	29,800	29,750	29,755	29,756	81,0	87,7	87,5	83.5	83,0	,,	,,	Calm and S. E.	Clear.
14	29,758	29,778	29,788	29,740	29,778	81,0	88,5	89,8	84,0	82,2	,,	,,	Variable.	Mostly cloudy, and some rain.
15	29,768	29,808	29,807	29,757	29,778	78,0	87,8	88,0	84,0	84,0	,,	,,	Calm and N. E.	Cloudy, and some hard rain.
16	29.745	29,800	29,810	29,738	29,750	77,0	84,7	82,7	82,0	82,0	9,5	0,4	Land.	Cloudy, and some rain.
17	29,788	29,810	29,825	29,755	29,818	77,0	83.8	83,0	84.0	83,0	2,0	,,	Calm and Land.	Mostly clear.
18	29,808	29,844	29,820	29,800	29,820	80,8	88,8	87,2	84,2	83,5	0,4	,,	Calm and Land.	Hazy and rain.
19	29,840	29,885	29,835	29,808	29,830	84,0	88,2	89,[illegible]	84,4	84,0	1,2	,,	Calm and S. E.	Mostly clear.
20	29,830	29,834	29,810	29,800	29,832	81,0	89,6	90,4	84,4	83,0	,,	,,	Land.	Mostly clear—some rain.
21	29,800	29,830	29,802	29,768	29,777	80,0	89,2	89,8	85,5	85,0	,,	,,	S. E.	Cloudy.
22	29,810	29,850	29,810	29,800	29,830	80,0	86,4	87,0	83,3	84,0	,,	,,	Fresh Land.	Cloudy.
23	29,820	29,840	29,820	29,810	29,820	80,0	86,2	86,8	79,4	81,0	,,	1,6	Land.	Cloudy.
24	29,822	29,868	29,830	29,822	29,866	79,2	85,3	87,0	85,0	83,0	,,	,,	Land and Calm.	Cloudy.
25	29,878	29,900	29,866	29,887	29,848	80,0	86,6	87,7	80,4	80,0	,,	,,	N. E.	Cloudy.
26	29,850	29,850	29.878	29,800	29,833	80,0	86,2	87,5	86,0	85,5	,,	,,	Land.	Cloudy—some rain.
27	29.833	29,825	29,788	29,868	29,824	79,0	85.6	87,4	86,0	84,2	,,	,,	Land.	Cloudy.
28	29,810	29,830	29,810	29,800	29,820	79,5	87,2	89,0	88,0	86,5	,,	,,	Calm and S. E.	Cloudy.
29	29,850	29,848	29,858	29,800	29,830	80,8	89,8	89,0	85,5	85,6	,,	,,	S. E.	Cloudy.
30	29.860	29,878	29,888	29,800	29 855	81,0	88,0	89,5	90,0	86,0	,,	,,	Calm and S. E.	Clear.
31	29.878	29,900	29.866	29,850	29,900	81.0	90,2	85,8	84,5	81,7	,,	,,	Calm.	Clear.

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height....	29,900	92,0
Least Height.......	29,700	77,0
Mean............	29,800	84,8
Extreme Difference.	00,200	15,6

	Rain. Inches.
Observed......	25,9
Reduced	6,4¼

PHASES OF THE MOON.

	D.	H. M.
New Moon....................	7	5 8 M.
First Quarter.................	13	7 33 A.
Full Moon....................	21	1 54 A.
Last Quarter..................	29	4 23 A.

In this Month

The nearest approach of the Moon to the Earth was on the 8th.
The Moon had receded to the greatest distance on the 23d.

August 1815.

	BAROMETER.					THERMOMETER (*exposed to a free Current of air.*)					RAIN GAUGE.		WINDS.	WEATHER, &c.
Days.	*Sun rise.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*Sun rise.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*From Sun set to Sun rise.*	*From Sun rise to Sun set.*		
	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	29,900	29,910	29,866	29,860	29,930	83,0	91,0	91,5	85,0	87,5	,,	,,	Land and S. E.	Mostly clear.
2	29,900	29,915	29,833	29,844	29,900	81,0	91,8	95,0	84,6	84,0	,,	,,	Calm, land & S.E.	Hazy and clear alternately.
3	29,855	29,860	29,888	29,810	29,844	83,3	91,7	90 8	86 0	84,5	,,	,,	Land and S. E.	Hazy and clear.
4	29.848	29,840	29 850	29,768	29,835	83,0	91,5	92,0	91,0	87,0	,,	,,	Land and calm.	Clear and hazy.
5	29,833	29.860	29 790	29,784	29,844	83,0	92,0	93.5	87.4	85,0	,,	,,	Land and S. E.	Hazy and clear.
6	29.844	29,845	29,825	29,828	29,844	80,5	88,9	91,0	84.8	85,0	,,	,,	S. E.	Clear.
7	29,878	29,855	29.818	29,820	29,844	80,0	92,5	91,0	84,0	84,0	,,	,,	Land.	Cloudy.
8	29,885	29.877	29,900	29,910	29.826	79,5	92,0	95,2	87,0	88,0	,,	,,	Calm and land.	Clear.
9	29,840	29,840	29.810	29,815	29,860	83,5	92,0	91,0	85,0	84,0	,,	,,	Calm and land.	Clear mostly.
10	29.877	29,866	29,840	29,830	29,850	81,5	93,0	91,0	86,5	84,0	,,	,,	Land and S. E.	Hazy.
11	29.866	29,874	29,888	29,835	29,855	82,0	92,0	91,5	84,5	84,0	,,	,,	Variable.	Clear.
12	29.848	29,888	29,874	29,878	29,858	82,0	91,8	90,0	86,0	84,0	,,	,,	S. E.	Hazy.
13	29,888	29,900	29,877	29,845	29 900	80,0	88,0	87,0	87,2	84,0	,,	,,	N. E. and calm.	Cloudy.
14	29,902	29,915	29,855	29,850	29,900	80,0	91,0	90,5	84,0	84,5	,,	,,	Calm and S. E.	Hazy—some rain.
15	29,900	29,940	29,878	29,844	29,830	79,9	81,7	80,0	84,0	83,0	,,	,,	Calm.	Cloudy.
16	29,904	29,910	29.850	29,848	29,888	30,0	90,0	87.5	84,0	83.0	,,	,,	Calm & S. E.	Clear.
17	29.900	29,940	29,871	29,866	29,840	82,0	90,0	89,8	85,2	84,0	,,	,,	Calm & S. E.	Hazy and misty.
18	29,910	29,920	29,870	29.900	29.944	78,8	88,8	86,6	83,5	84,0	,,	,,	Calm & S. E.	Cloudy.
19	......	29,980	......	29,906	29,917	....	88,0	....	84,5	83,0	,,	,,	S. E.	Hazy.
20	29.945	29,910	29,888	29,875	29,915	81,5	87,0	87,0	83,5	83,0	,,	,,	Calm & S. E.	Clear.
21	29,910	29,940	29,918	29,857	29,925	80,0	88,0	88,2	84,7	83,0	,,	,,	Calm & S. E.	Clear.
22	29,930	29,942	29,945	29,877	29,910	81,5	87,8	87,5	84,0	83,0	,,	,,	Calm & S. E.	Clear.
23	29,910	29,940	29,900	29,844	29,870	81,4	89,2	89,0	84,0	83,0	,,	,,	S. E.	Clear.
24	29.878	29,900	29,844	29,830	29,900	81,5	89,0	87,2	84,3	83,5	,,	,,	S. E.	Clear—lightning at night.
25	29,888	29,877	29,855	29,856	29,900	80,0	90,2	89,0	85,0	84,0	,,	,,	S. E.	Clear.
26	29.888	29,915	29 880	29,840	29 900	80,4	88,0	87,7	84,5	83,5	,,	,,	Calm & S. E.	Clear.
27	29,900	29 918	29,900	29,856	29,900	81,0	88.5	89,8	85,0	85,0	,,	,,	S. E.	Clear.
28	29,900	29,915	29,900	29,900	29.915	82,5	88,5	89,0	79,5	79,0	,,	,,	Calm & S. E.	Cloudy.
29	29,918	29,940	29.900	29,877	29.918	78,0	89,0	87,5	84.0	82,0	,,	,,	S. E.	Hazy.
30	29,910	29,944	29,878	29,880	29,900	79,6	91,0	91,5	84,2	81,0	,,	,,	Land and S. E.	Cloudy, and some rain.
31	29,910	29,933	29.868	29,824	29,860	79,0	85.5	87,2	82,7	....	,,	,,	S. E.	Cloudy, and some rain.

	Barometer.	Thermometer.
	Inches.	Degrees.
Greatest Height	29,980	95,2
Least Height........	29,768	78,0
Mean.............	29,874	86,6
Extreme Difference..	00,212	17,2

PHASES OF THE MOON.

	D.	H.	M.	
New Moon................	5	0	18	A.
First Quarter............	12	4	34	M.
Full Moon...............	20	5	32	M.
Last Quarter............	28	3	43	M.

In this Month

The nearest approach of the Moon to the Earth was on the 5th.
The Moon had receded to the greatest distance on the 19th.

September 1815.

Days.	BAROMETER.					THERMOMETER (*exposed to a free Current of air.*)					RAIN GAUGE.		WINDS.	WEATHER, &c.
	Sun rise.	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock*	*Sun rise.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*From Sun set to Sun rise.*	*From Sun rise to Sun set.*		
	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	29,900	29,910	29.866	29,860	29,930	83,0	91,0	91,5	85,0	84,5	0,6	,,	Land and S. E.	Mostly clear.
2	29,838	29.870	29 818	29,810	29,850	80,5	91,4	92,0	89.0	88,0	,,	,,	S. E.	Clear.
3	29,900	29,900	29.838	29,828	29,840	81,5	90,6	92,5	88,0	88,0	,,	,,	Land	Clear
4	29,866	29,900	29,820	29,818	29,850	83,0	91,0	92,5	87,4	85,0	,,	,,	Calm	Hazy.
5	29,855	29,880	29,810	29,810	29,868	84,0	90,0	91,5	89,5	88,0	,,	,,	S. E.	Mostly hazy.
6	29,815	29,880	29,825	29,800	29,815	81,5	90,0	91,0	89,0	88,0	,,	,,	S. E.	Clear.
7	29,800	29,900	29.830	29,810	29,860	81,0	88,5	89,4	88,0	85,0	,,	,,	Land	Cloudy.
8	29.820	29,888	29,820	29,810	29,880	82,0	87.7	91,5	87,5	87,0	,,	,,	Calm and land.	Clear.
9	29.855	29.888	29,820	29,812	29,850	80,5	85,0	87,0	84,5	83,0	,,	,,	Calm and land.	Clear and hazy.
10	29,852	29,870	29,825	29,800	29,800	78,8	78,4	82,8	83,0	80,5	,,	1,8	Land and S. E.	Hazy.
11	29,844	29.875	29,828	29,825	29,860	79,0	79,2	82,5	82,0	78,0	,,	0,5	Variable.	Clear.
12	29,840	29,844	29,800	29,800	29.850	77,8	87,0	85,0	80,8	79,0	,,	0,5	S. E.	Hazy.
13	29,815	29,877	29,810	29,788	29,805	81,5	83,3	83,0	82,5	82,0	,,	,,	N. E. and calm.	Cloudy.
14	29,800	29,850	29,805	29,800	29,830	79,0	84,8	84,6	79,0	79.2	,,	,,	Calm and S. E.	Hazy and some Rain.
15	29,800	29.800	29,855	29,778	29.818	78,8	77,2	85,5	85,0	83,0	,,	,,	Calm.	Cloudy.
16	29,800	29,820	29,800	29,778	29.840	78,8	89,0	90,0	84,5	82 0	,,	,,	Calm and S. E.	Clear.
17	29,800	29,885	29.810	29,760	29,818	79,7	86,2	88,6	86.0	80,8	,,	,,	Calm and S. E.	Hazy and misty.
18	29,800	29 810	29,755	29,770	29,810	78,0	90.5	92,5	86,4	84 0	1,5	,,	Calm and S. E.	Cloudy.
19	29,830	29.844	29,825	29,800	29,888	80,0	88,8	86,8	83,0	82,5	,,	,,	S. E.	Hazy.
20	29,870	29,900	29 875	29,840	29,900	80,0	86 5	90,5	86,4	84,5	,,	,,	Calm and S. E.	Clear.
21	29.902	29,944	29 950	29,900	29.920	81,5	90,5	86,8	85.0	84,0	,,	,,	Calm and S. E.	Clear.
22	29,920	29,955	29 960	29,940	29,928	82,0	91,5	94,0	89,0	86,6	,,	,,	Calm and S. E.	Clear.
23	29 940	29,988	29.920	29.887	29.900	82,5	90,5	92,5	86,0	84,0	,,	,,	S. E.	Clear.
24	29.950	29 955	29,940	29,900	29,950	81,5	90,8	94 0	88,0	85,6	,,	,,	S. E.	Clear—some lightning.
25	29.988	29,950	29,910	29,916	......	80,0	93,5	95,0	84,6	....	,,	,,	S. E.	Clear.
26	29 954	29,972	29,932	29,915	29,962	80,0	91,2	90,0	85,0	84,0	,,	,,	Calm and S. E.	Clear.
27	29.948	29,988	29,940	29,924	29 900	80,0	91.0	91,0	84,5	84,0	,,	,,	S. E.	Clear.
28	29,940	29 940	29.900	29,888	29.900	80,5	93,0	88,0	84,0	82 5	,,	2,6	Calm and S. E.	Clear.
29	29,900	29 916	29.888	29,888	29,900	79,9	88,8	89,8	87,5	85.8	0,4	,,	S. E.	Cloudy and Rain.
30	29,925	29,940	29,900	29,910	29,950	80,2	90,0	88,8	80,5	79,8	,,	3,5	Land and S. E.	Hazy.

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height....	29 988	95 0
Least Height......	29,755	77.2
Mean.............	29,871	86,1
Extreme Difference.	00,233	17,8

	Rain. Inches.
Observed......	11.4
Reduced..	2,85

PHASES OF THE MOON.

	D.	H.	M.
New Moon....................	3	7	42 A.
First Quarter...................	10	5	21 A.
Full Moon	18	9	35 A.
Last Quarter...................	26	1	18 A.

In this Month

The nearest approach of the Moon to the Earth was on the 2d.
The Moon had receded to the greatest distance on the 15th.

October 1815.

Days.	Barometer.					Thermometer (exposed to a free Current of air.)					Rain Gauge.		Winds.	Weather, &c.
	Sun rise.	Noon.	2 o'clock.	Sun set.	9 o'clock.	Sun rise.	Noon.	2 o'clock.	Sun set.	9 o'clock	From Sun set to Sun rise.	From Sun rise to Sun set.		
	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	29,962	30,000	29,955	29,950	30,002	78,8	89,0	84,8	84,0	82,5	,,	,,	Calm.	Hazy.
2	30,010	30,030	30,000	29,988	30,040	78,8	88,5	90,0	83,0	79,8	,,	,,	Land and Calm.	Hazy.
3	30,000	30,020	30,000	29,986	30,030	77,7	87,7	87,0	85,0	82,5	,,	,,	S. E.	Hazy.
4	29,988	30,010	30,022	29,980	30,000	80,0	88,7	90,7	83,8	81,8	,,	,,	Calm.	Clear.
5	29,988	29,988	29,918	29,910	29,940	79,8	88,2	88,0	83,5	83,0	,,	,,	Variable.	Clear.
6	29,940	29,955	29,925	29,904	29,918	78,8	89.0	89,5	84,0	84,0	,,	,,	S. E.	Clear.
7	29,955	29,999	29,945	29,930	29,940	80,0	90,0	89,8	84,0	84,0	,,	,,	Calm and S. E.	Clear.
8	29,960	29,900	29,960	29,955	30,000	79,0	87,2	86,2	84,0	81,2	,,	,,	S. E.	Hazy.
9	30,000	30,055	29,980	29,940	30,010	78,8	86,6	85,5	82,0	80,5	0,5	,,	S. E.	Hazy.
10	30,000	30,030	29,977	29,945	30,010	78,0	86,5	87,0	83,3	82,0	,,	,,	S. E.	Clear.
11	30,000	30,000	29,940	29,915	29,944	79,0	85,0	88,5	84,4	82,5	,,	,,	S. E.	Clear.
12	30,000	30,010	29,988	29,945	29,970	81,5	82,0	83,0	83,0	79,0	,,	,,	Calm.	Cloudy, and some rain.
13	30,005	30,008	29,955	29,957	30,010	77,0	86,2	87,0	84,5	82,2	,,	,,	Calm.	Hazy.
14	30,000	30,044	29,988	29,966	30,020	78,8	83,0	83,0	82,0	81,6	,,	,,	Calm and S. E.	Clear, some rain in the morning.
15	30,000	30,020	......	30,000	30,008	77,8	84,6	....	82,0	79,0	0,4	,,	S. E.	Hazy,—rainbow in the morning.
16	30,000	30,010	30,000	29,946	30,010	76,6	87,0	84,0	82,0	81,0	,,	,,	S. E.	Clear.
17	30,015	30,000	29,960	29,933	30,000	76,5	88,5	88,0	83,0	82,0	,,	,,	S. E.	Hazy—dew, and some rain.
18	30,010	30,020	29,966	29,960	29,988	80,0	85,5	86,7	84,5	83,0	0,3	,,	Calm and S. E.	Mostly clear—distant lightning.
19	30,000	30,008	29,955	29,966	29 966	78,8	88,8	88,2	85,0	83,2	,,	,,	N. E.	Hazy—dew—some rain at night.
20	29,960	30,000	29,945	29,940	29,960	74,0	75,0	77,0	76,6	76,0	4,8	,,	N. E.	Cloudy and rain.
21	30.000	30,000	29,955	29,945	30,000	75,0	80,0	83,0	80,0	78,5	1,0	3.6	N. E.	Hazy.
22	29,988	30,004	29,988	29,968	29,970	76,0	83.0	83,5	79,0	78,0	,,	0,4	N. E.	Hazy.
23	30,000	30,000	29,945	29,948	29,978	81,2	84,0	85,5	83,5	80,5	,,	,,	N. E.	Hazy.
24	29,988	30,000	29,946	29,925	29,968	78,0	84,0	83,0	81,5	81,0	0,8	,,	N. E.	Cloudy and some rain.
25	29,955	29,966	29,928	29,918	29,940	78,0	83,3	83,0	81,5	81,0	0,4	,,	N. E.	Cloudy.
26	29,920	29,930	29,928	29,900	29,910	76,0	80,8	81,8	74,0	74,0	,,	4,0	N. E.	Rain.
27	29,900	29,925	29,855	29,830	29,860	72,8	77,2	79,0	77,0	76,0	0.5	,,	N. E.	Rain.
28	29.860	29,878	29,833	29,835	29,935	75,0	80,5	84,0	83,0	80,5	0,8	,,	N. E.	Cloudy and rain.
29	29.860	29,882	......	29,835	29,900	76,0	84,0	.. .	83,0	80,5	,,	7,5	Calm and N. E.	Mostly clear—some rain.
30	29,888	29,910	29,9845	29,841	29,850	76,0	81,0	74,5	77,0	76,5	,,	,,	N. E.	Cloudy and some rain.
31	29,888	29,930	29,900	29,900	29,930	76,0	88,0	89,2	80,5	78,0	,,	,,	N. E.	Cloudy.

	Barometer, Inches.	Thermometer. Degrees.
Greatest Height....	30,055	90.7
Least Height......	29,830	74,0
Mean............	29,9425	82,35
Extreme Difference,	00,225	16,7

Rain.	Inches.
Observed..	25.0
Reduced ..	6,2¼

PHASES OF THE MOON.

	D.	H.	M.
New Moon..................	3	4	16 M.
First Quarter................	10	10	5 M.
Full Moon..................	18	1	24 A.
Last Quarter................	25	9	29 A.

In this Month

The Moon had receded to the greatest distance on the 13th.
The nearest approach of the Moon to the Earth was on the 28th.

November 1815.

Days.	BAROMETER.					THERMOMETER (*exposed to a free Current of air.*)					RAIN GAUGE.		WINDS.	WEATHER, &c.
	Sun rise.	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*Sun rise.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*From Sun set to Sun rise.*	*From Sunrise to Sun set.*		
	inches.	inches.	inches	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	29,930	29,950	29,878	29,905	29,920	77,0	84,0	84,0	81,0	80,0	,,	,,	North Easterly.	Calm.
2	29,940	29,955	29,882	29,900	29,935	76,5	84,6	83,4	82,0	80,5	,,	,,	N. E.	Hazy.
3	29,940	29,955	29,914	29,900	29 948	77,0	84,4	30,5	80,0	81,0	,,	,,	N. E.	Cloudy, and some rain.
4	29,920	29,955	29,892	29,910	29,945	79,4	85,0	86,0	83,0	82,0	,,	,,	Calm.	Cloudy.
5	29,945	29,968	29,920	29,934	30,000	78,0	85,5	85,5	83,6	82,0	,,	,,	S. E.	Hazy.
6	29,988	30,008	29,960	29,946	29,925	77,0	85,6	86,5	85,0	82,5	,,	,,	Calm.	Clear.
7	30,000	30,028	30,000	30,000	30,040	78,2	85,5	87,0	83,5	82,0	,,	,,	Calm & N. E.	Hazy, some rain—dew.
8	30,042	30,055	30,005	30,020	30.010	78,0	84,2	84,5	82,0	78,5	,,	,,	N. E.	Mostly clear.
9	30,010	30,040	30,000	30,000	30,042	79,5	84,4	84,0	79,0	79,8	0,5	2,8	N. E.	Cloudy, and some rain.
10	30,030	30,030	30,000	30,000	30,002	76,6	77,0	79,0	76,2	77,0	1,0	1,5	N. E.	Cloudy and some rain.
11	30,000	30,005	29,966	29,940	30,005	68,5	77,0	78,2	75.5	75,4	3,5	4,5	N. E.	Cloudy and rain.
12	30,000	30,010	29,955	29,935	30,005	73,5	78,2	79,8	78,0	78,0	11,5	2,0	N. E.	Cloudy and rain.
13	29,988	30,010	29,950	29,945	29,975	75,5	81,8	82,0	79,8	79,5	,,	,,	N. E.	Hazy.
14	29,955	30,000	29,955	29,944	29,988	76,0	82,5	82,6	81,0	80,0	1,8	,,	N. E.	Cloudy and rain.
15	29,987	30,002	29,955	29,943	30.002	77,0	83,3	83,0	81,5	80,5	,,	,,	N. E.	Cloudy and some rain.
16	30,005	30,030	30,000	29,978	30 018	78,5	80,5	80,0	77,0	79,0	3,5	2,6	Calm.	Cloudy and rain.
17	30,040	30,066	30,004	30,033	30,030	78,0	82,5	82,0	81,2	80,0	2,0	,,	N. E.	Hazy.
18	30,035	30,040	30,020	30,000	30,030	76,5	82,5	83,0	80,5	78,0	,,	,,	Calm & N. E.	Mostly clear—dew in the morning.
19	30,020	30,044	30,010	30,000	30,040	75,2	82,5	83,0	80,0	78,0	,,	,,	N. E.	Clear—dew.
20	30,020	30,028	30,000	30,000	30,010	74,0	83,3	83,0	80,4	80,0	,,	,,	N. E.	Cloudy.
21	30,030	30,040	31,010	30,008	30,020	75,0	83,5	83,6	80,8	80,0	,,	,,	N. E.	Hazy and some rain.
22	30,000	30,040	29,988	29,980	29,988	75,7	79,8	81,5	79,0	78,0	,,	0,3	N. E.	Cloudy, and some rain.
23	29,980	30,000	29,955	29,950	29 966	73,5	79,0	76,4	75,0	74,0	1,2	6,6	N. E.	Cloudy, and heavy rain.
24	29,945	29,966	29,920	30,000	29,960	74,0	76,0	75,0	75,0	74,5	0,5	2,8	N. E.	Rain.
25	29,918	29,950	29,900	29,900	29,908	74,0	76,0	76,7	76,6	77,0	2,0	1,8	N. E.	Rain at night.
26	29,900	29,910	29,900	29,850	......	74.0	76,0	75,5	74,2	....	8,6	9,8	N. E.	Heavy rain.
27	29,830	29,860	29,800	29,800	......	71,4	72,2	72,2	72,0	....	7,8	19,6	N. E.	Heavy rain the whole day and night.
28	29,820	29,828	29,782	29,730	......	72,2	69,2	69,2	69,0	74,0	22,5	12,0	N. E.	Heavy rain.
29	29,814	29,878	29,820	29,815	29,888	71,2	76,0	78,0	76.2	77,8	,,	,,	N. E.	Clear.
30	29,908	29,940	29,874	29,900	29,944	74,5	79,2	79,5	78,0	....	,,	,,	N. E.	Clear.

	Barometer.	Thermometer.
	Inches.	Degrees.
Greatest Height ...	30,066	87,0
Least Height.......	29,730	68.5
Mean...........	29 898	77.75
Extreme Difference..	00,336	18,5

Rain.
Inches.
Observed......132,7
Reduced.. .... 33,1¼

PHASES OF THE MOON.

	D.	H.	M.	
New Moon...............	1	2	55	A.
First Quarter............	9	5	55	M.
Full Moon...............	17	4	29	M.
Last Quarter............	24	4	53	M.

In this Month

The Moon had receded to the greatest distance on the 10th:
The nearest approach of the Moon to the Earth was on the 24th.

December 1815.

Days.	BAROMETER.					THERMOMETER (*exposed to a free Current of air.*)					RAIN GAUGE.		WINDS.	WEATHER, &c.
	Sun rise.	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock*	*Sun rise.*	*Noon.*	*2 o'clock*	*Sunset.*	*9 o'clock.*	*From Sun set to Sun rise.*	*From Sun rise to Sunset.*		
	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	29,938	29,966	29,918	29,910	29,930	74,7	80,8	80,5	79,0	78,0	,,	,,	North Easterly.	Clear and cloudy.
2	29,944	30,000	29,955	29,950	30,020	75,2	81,2	83,3	83,0	79,8	,,	,,	Calm.	Clear.
3	30,000	30,010	29,998	29,966	30,040	76,2	81,5	81,5	80,0	79,0	,,	,,	N. E.	Mostly clear, and dew on the ground.
4	30,030	30,054	29,984	29,983	29,988	76,0	83,5	83,0	82,2	79,5	,,	,,	N. E.	Mostly clear—dew.
5	30,030	30,044	30,000	29,966	30,020	76,0	83,4	82,5	80,6	77,5	,,	,,	N. E.	Clear.
6	30,000	30,010	29,970	29,978	30,000	72,0	80,0	81,4	78,5	77,8	,,	,,	N. E.	Clear.
7	30,000	30,030	30,000	30,005	30,020	73,0	80,2	80,5	77,8	76,4	,,	,,	N. E.	Clear—weather comparatively cold.
8	30,035	30,070	30,020	30,020	30,070	76,0	81,2	81,2	78,0	77,0	,,	,,	N. E.	Cloudy.
9	30,044	30,044	30,018	30,010	30,078	77,0	81,5	81,0	80,5	78,0	,,	,,	N. E.	Cloudy.
10	30,000	30,077	30,004	30,040	30,100	76,5	79,2	79,0	78,0	77,7	,,	,,	N E.	Cloudy.
11	30,100	30,010	30,066	30,050	30,015	73,0	80,5	80,8	78,0	76,0	,,	,,	N. E.	Cloudy.
12	30,100	30,120	30,101	30,100	30,120	73,0	79,2	80,2	78,0	77,6	,,	,,	N. E.	Hazy—cold for Madras.
13	30,105	30,088	30,100	30,100	30,150	71,5	80,0	80,5	77,0	75,6	,,	,,	N. E.	Mostly clear—dew.
14	30,145	30,100	30,055	30,030	30,055	72,0	80,0	80,5	77,6	75,0	,,	,,	N. E.	Clear.
15	30,120	30,082	30,100	30,100	30,100	71,2	80,4	81,5	77,0	75,5	,,	,,	N. E.	Clear and cold.
16	30,100	30,140	30,100	30,100	30,150	71,0	80,0	80,0	78,2	78,0	,,	,,	N. E.	Mostly clear and cold.
17	30,155	30,188	30,100	30,120	30,150	73,0	81,0	82,0	78,0	77,7	,,	,,	N. E.	Clear.
18	30,130	30,180	30,100	30,100	30,160	73,0	81,5	82,0	78,2	78,5	,,	,,	N. E.	Mostly cloudy.
19	30,120	30,168	30,122	30,100	30,120	74,0	81,5	81,2	78,0	77,7	,,	,,	N. E.	Clear.
20	30,100	30,100	30,070	30,050	30,100	74,0	80,5	80,6	77,0	75,2	,,	,,	N. E.	Clear and dew.
21	30,080	30,100	30,055	30,055	30,100	70,0	79,8	80,0	76,5	76,0	,,	,,	N. E.	Mostly clear and cold.
22	30,088	30,100	30,055	30,050	30,100	72,0	80,0	80,0	77,0	77,0	,,	,,	N. E.	Mostly clear and cold.
23	30,100	30,120	30,050	30,055	30,068	71,0	79,2	80,0	77,0	77,0	,,	,,	N. E.	Mostly hazy.
24	30,100	30,110	30,055	30,060	30,100	71,0	80,0	79,0	77,4	77,0	,,	,,	N. E.	Mostly hazy and cold.
25	30,100	30,150	30,100	30,055	30,068	73,0	81,5	80,0	78,0	77,0	,,	,,	N. E.	Mostly hazy and cold.
26	30,070	30,100	30,055	30,050	30,100	71,0	79,0	80,2	77,6	77,0	,,	,,	N. E.	Hazy—dew in the morning.
27	30,000	30,100	30,055	30,050	30,110	70,0	76,0	77,0	72,2	72,0	,,	1,5	N. E.	Cloudy and Rain.
28	30,070	30,100	30,080	30,044	30,100	73,5	74,2	75,5	72,0	71,5	1,6	1,5	S. E. and N. E.	Cloudy and Rain.
29	30,100	30,082	30,100	30,080	30,110	72,5	76,5	74,6	75,0	75,0	7,0	2,5	Calm and S. E.	Cloudy and some Rain.
30	30,088	30,120	30,100	30,100	30,125	74,6	79,5	79,0	78,0	79,0	4,6	,,	S. E.	Mostly clear but some Rain.
31	30,120	30,140	30,082	30,105	30,140	74,0	80,5	80,7	76,8	75,6	0,5	,,	S. E.	Flying clouds.

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height....	30,188	83,5
Least Height.......	29 910	70,0
Mean...............	30,049	76,75
Extreme Difference.	00,278	13,5

	Rain. Inches.
Observed......	19,2
Reduced	4,8

PHASES OF THE MOON.

	D.	H.	M.
New Moon..................	1	4	12 M.
First Quarter...............	9	3	11 M.
Full Moon..................	16	6	19 A.
Last Quarter...............	23	0	30 A.
New Moon...	30	8	12 A.

In this Month

The Moon had receded to the greatest distance on the 7th.

The nearest approach of the Moon to the Earth was on the 19th.

TABLE of the MEAN, GREATEST, and LEAST Heights; with the EXTREME DIFFERENCES of the BAROMETER, and THERMOMETER-exposed; together with the FALL of RAIN at the MADRAS OBSERVATORY in the year 1815.

MONTHS.	BAROMETER.				THERMOMETER. (exposed to a free Current of air.)				RAIN GAUGE.	
	Mean.	*Greatest.*	*Least.*	*Extreme difference.*	*Mean.*	*Greatest.*	*Least.*	*Extreme difference.*	*Observed.*	*Reduced.*
	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	inches.	inches.
January	30,077	30,200	29,954	00,246	75,0	83,8	66,2	17,6	6,6	1,6½
February	30,004	30,130	29,878	00,252	79,8	89,2	70,4	18,8	”	”
March	29,962	30,100	29,824	00,276	80,0	90,0	70,0	20,0	”	”
April	29,902	30,020	29,784	00,236	88,6	98,0	79,2	18,8	”	”
May	29,8545	29,954	29,755	00,199	92,25	10,45	80,0	12,45	”	”
June	29,8275	29,925	29,730	00,195	85,9	97,8	74,0	23,8	”	”
July	29,800	29,900	29,700	00,200	84,8	92,0	77,0	15,6	25,9	6,4¾
August	29,874	29,980	29,768	00,212	86,6	95,2	78,0	17,2	”	”
September	29,871	29,988	29,755	00,233	86,1	95,0	77,2	17,8	11,4	2,8½
October	29,9425	30,055	29,830	00,225	82,35	90,7	74,0	16,7	25,0	6.2½
November	29,898	30,066	29,730	00,336	77,75	87,0	68,5	18,5	132.7	33 1¼
December	30,049	30,188	29,910	00,278	76,75	83,5	70,0	13,5	19,2	4,8

	BAROMETER.	THERMOMETER EXPOSED.	RAIN GAUGE.	
			Observed.	*Reduced.*
	inches.	degrees.	inches.	inches.
General Mean	29,922	83,0	220,8	55,2
Greatest Height	30,200	104,5		
Least Height	29.700	66,2		
Extreme Difference	00,500	038,3		

During this year 1815
The Moon was nearest to the Earth on the 25th of January and 5th of August.
The Moon was at the greatest distance from the Earth on the 11th of January and the 19th of August.

METEOROLOGICAL TABLES.

PART II.

METEOROLOGICAL JOURNAL

KEPT IN THE

MADRAS OBSERVATORY

IN THE YEAR 1816.

January 1816.

Days.	Barometer.					Thermometer (exposed to a free Current of air.)					Rain Gauge.		Winds.	Weather, &c.
	Sun rise.	Noon.	2 o'clock.	Sun set.	9 o'clock.	Sun rise.	Noon.	2 o'clock.	Sun set.	9 o'clock.	From Sun set to Sun rise.	From Sun rise to Sun set.		
	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	30,200	30,188	30,150	30,160	30,200	75,7	80,2	80,5	78,8	77,0	”	”	South Easterly.	Clear.
2	30,164	30,180	30,144	30,158	30,160	76,2	79,5	79,0	77,2	75 5	”	”	S. E.	Clear weather—warm for the season.
3	30,162	30,160	30,130	30,140	30,200	71,2	78,8	79,0	77,2	76,0	”	”	S. E.	Clear.
4	30,164	30,205	30,150	30,132	30,156	74,0	79,2	78,9	76,4	75,0	”	”	S. E.	Clear.
5	30,150	30,140	30,100	30,100	30,100	71,5	79,2	79,0	76,0	75,2	”	”	S. E.	Clear.
6	30,140	30,125	30,080	30,050	30,120	71,0	79,2	79,0	76 6	74,5	”	”	S. E.	Clear.
7	30,100	30,110	30,100	30,120	30,140	71,0	78,8	78,0	77,0	75,0	”	”	S. E.	Clear.
8	30,045	30,160	30,110	30,120	30,200	74,0	80,5	80,2	79,0	78,0	”	”	S. E.	Clear.
9	30,145	30,160	30,155	30,130	30,150	74,5	75,8	76,0	75,5	75,0	”	0,4	S. E.	Hazy and some rain.
10	30,110	30,150	30,044	30,060	30,100	72,0	82,0	82,5	81,0	80,5	”	”	S. E.	Cloudy—heavy dew—some lightning.
11	30,080	30,105	30,077	30,055	30,100	80,0	81,5	82,0	78,0	75,0	”	”	Calm and S. E.	Clear, heavy dew, & cold weather comparatively.
12	30,200	30,160	30,100	30,120	30,110	72,5	83,0	82,5	79 6	76,8	”	”	S. E.	Clear—heavy dew at night.
13	30,150	30,180	30,160	30,140	30,180	72,8	83,5	83,2	80,5	80,0	”	”	S. E.	Clear—and cool weather—dew.
14	30,150	30,200	30,165	30,170	30,200	75,2	82,0	82,0	77,8	76,0	”	”	S. E. and N. E.	Mostly hazy and cold.
15	30,200	30,225	30,180	30,200	30,210	75,0	78,8	78,0	77,0	77,2	”	”	N. E.	Cloudy and cold for Madras.
16	30,200	30,220	30,200	30,200	30,205	72,5	80,5	79,0	77,0	73,8	”	”	N. E.	Heavy dew—and cold early.
17	30,150	30,200	30,200	30,180	30,200	71,0	82,0	82,0	77,0	75,5	”	”	N. E.	Clear and cold—dew.
18	30,200	30,220	30,180	30,200	30,200	71,4	81,7	81,0	78,8	76,5	”	”	N. E.	Clear and cold—dew.
19	30,200	30,210	30,200	30,170	30,2000	74,0	83,5	83,8	79,6	78,0	”	”	N. E.	Clear and cold.
20	30,200	30,205	30,180	30,170	30,200	75,0	83,0	83,2	77,0	77,0	”	”	N. E.	Hazy and some rain.
21	30,210	30,220	......	30,200	30,200	71,4	83,2	....	77,2	77,8	”	”	N. E.	Clear—dew.
22	30,200	30,228	30,200	30,200	30,220	71,5	82,5	82,0	78,0	76,6	”	”	N. E.	Mostly clear.
23	30,200	30,200	30,180	30,166	30,167	71,0	81,2	81,5	78,5	74,0	”	”	N. E.	Clear—dew.
24	30,170	30,145	30,100	30,100	30,120	70,0	81,2	80,0	76,0	72,0	”	”	N. E.	Clear—dew—cold.
25	30,100	30,140	30,110	30,110	30,160	66,0	80,0	81,2	77,0	72,0	”	”	Calm.	Clear—heavy dew—cold.
26	30,150	30,160	30,162	30,140	30,164	68,0	82,2	82,0	78,0	76,2	”	”	N. E.	Clear—dew and cold weather.
27	30,150	30,200	30,150	30,140	30,140	68,5	82,6	82,0	78,4	76,0	”	”	N. E.	Clear—dew and cold.
28	30,140	30,160	......	30,130	30,140	72,0	75,2	....	76,0	75,0	”	”	N. E.	Cloudy and some rain.
29	30,140	30,166	30,140	30,144	30,160	69,0	82,0	81,0	76,0	73,4	”	”	N. E.	Mostly hazy—dew.
30	30,140	30,160	30,120	30,130	30,160	71,0	82,5	82,5	78,0	74,8	”	”	N. E.	Hazy and cool weather.
31	30,160	30,200	30,150	30,164	30,156	69,2	81,5	83,0	80,0	76,6	”	”	N. E.	Clear and cool.

	Barometer.	Thermometer.
Greatest Height......	30,228	83,5
Least Height.......	30,044	66.0
Mean...............	30,136	74,75
Extreme Difference...	00,184	17,5

Rain.
Inches.
Observed.........0,4
Reduced.........0,1

PHASES OF THE MOON.

	D.	H.	M.	
First Quarter.........	15	8	39	M.
Full Moon..........	15	8	39	M.
Last Quarter........	21	9	34	A.
New Moon..........	29	2	11	A.

In this Month

The Moon had receded to the greatest distance on the 5th.
The nearest approach of the Moon to the Earth was on the 17th.

February 1816.

Days.	BAROMETER.					THERMOMETER (*exposed to a free Current of air.*)					RAIN GAUGE.		WINDS.	WEATHER, &c.
	Sun rise.	*Noon.*	2 *o'clock.*	*Sun set.*	9 *o'clock.*	*Sun rise.*	*Noon.*	2 *o'clock.*	*Sunset.*	9 *o'clock*	*From Sun set to Sun rise.*	*From Sun rise to Sun set.*		
	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	30.177	30,178	30,130	30,120	30,180	72,0	80,2	82.5	79,0	78,0	,,	,,	N. Easterly.	Clear—dew and comparatively cold weather.
2	30,160	30,200	30,166	30,160	30,200	72,7	78,0	78,8	77,0	77,0	,,	1,3	N E.	Cloudy and rain.
3	30,180	30,210	......	30,140	30,160	73.5	80,8	....	77,0	76 0	1,6	,,	Calm.	Cloudy.
4	30,100	30,124	......	30,070	30,100	75,0	81,5	....	79,2	77,8	,,	,,	N. E.	Cloudy.
5	30.080	30,110	30,066	30,050	30,056	70.0	77,2	78,0	75,0	74,0	,,	,,	N. E.	Hazy and cold for Madras.
6	30,080	30,126	30,088	30,100	30,130	72 0	80,2	81,2	77,0	75,5	,,	,,	N. E.	Hazy and cold.
7	30,110	30,150	30,120	30,100	30,150	72,2	82,0	82,2	77,2	76,0	,,	,,	N. E.	Hazy,—cold and dew.
8	30,155	30,177	30,130	30,115	30,140	73,0	81,8	82,0	78,0	74,0	,,	,,	N. E.	Clear and cold.
9	30,120	30,155	30,100	30,150	30,130	68 0	81,5	82,5	78,6	74,0	,,	,,	N. E.	Clear, heavy dew—cold.
10	30,110	30,136	30,105	30,100	30,120	68 0	82,0	81,8	78,5	74,0	,,	,,	N. E.	Clear, heavy dew—cold.
11	30,100	30,120	30,100	30,080	30,100	68 5	81,2	82,0	77,2	76,8	,,	,,	N. E.	Clear.
12	30,075	30,100	30,050	30,030	30,040	68,8	81,0	81,0	77,0	74,0	,,	,,	N. E.	Clear—dew.
13	30,050	30,100	30,100	30,040	30,055	68,2	82,0	82.0	78,0	76.6	,,	,,	Calm.	Clear—heavy dew at night.
14	30,100	30,118	30,050	30,060	30,100	69.0	82,2	83,0	79 0	77,5	,,	,,	N. E.	Clear—dew.
15	30,100	30,066	30,050	30,040	30,050	71.0	84,0	84 4	78.5	77.0	,,	,,	Calm.	Clear—dew.
16	30,030	30,100	30,055	30,040	30,055	72,0	82,6	83.3	782 0	77,8	,,	,,	S. E.	Clear.
17	30,030	30,070	30,050	30,030	30,066	72 0	80,2	81 8	78,0	76,0	,,	,,	Calm.	Hazy—dew.
18	30,070	30,200	30,050	30,050	30,100	72.5	82,8	82,5	78.5	77,2	,,	,,	S. E.	Clear—dew.
19	30,066	30,120	30,100	30,060	30,100	74 0	83,7	83,4	80,3	78,0	,,	,,	S. E.	Mostly hazy—dew.
20	30,050	30,015	30,100	30,050	30,100	75,7	84,0	84.5	80,0	79,0	,,	,,	S. E.	Flying clouds.
21	30,100	30,155	30,100	30,055	30,110	72,5	83,5	84,6	80,5	79,0	,,	,,	S. E.	Clear.
22	30,066	30,130	30,100	30,100	30,100	72,5	83,8	84,2	81,5	79,0	,,	,,	S E.	Clear.
23	30,100	30,144	30,100	30,080	30,100	73.6	83,8	84.5	80,0	78,2	,,	,,	S. E.	Clear.
24	30.100	30,130	30,100	30,088	30,100	72,0	83,0	84,0	80,0	78,8	,,	,,	N. E.	Hazy and clear.
25	30 088	30,130	......	30,100	30,120	74,5	84,5	....	80,0	77,7	,,	,,	Calm.	Clear—dew.
26	30,088	30,130	30,100	30,066	30,080	74,0	84,0	83,0	80,0	78,0	,,	,,	E.	Hazy.
27	30,100	30,110	30,080	30,055	30,100	70,0	84,0	83,0	80,0	77,7	,,	,,	N. E. and Calm.	Clear—dew.
28	30,055	30,088	30,015	30,000	30,010	69,8	85,0	84,5	78.8	75,0	,,	,,	E.	Clear, cold—dews at night.
29	30,000	30,035	30,000	30,000	30,015	71,2	83,0	82,5	78,0	76,5	,,	,,	S. E.	Clear—dew.

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height....	30,210	85 0
Least Height......	30,000	68,0
Mean............	30,105	75,15
Extreme Difference.	60,210	17,0

	Rain. Inches.
Observed..	2,9
Reduced ..	0,7¼

PHASES OF THE MOON.

	D.	H.	M.
First Quarter................	6	6	50 A.
Full Moon	13	5	30 A.
Last Quarter................	20	9	3 M.
New Moon....................	28	8	52 M.

In this Month

The Moon had receded to the greatest distance on the 1st.

The nearest approach of the Moon to the Earth was on the 14th.

March 1816.

Days.	Barometer.					Thermometer (exposed to a free Current of air.)					Rain Gauge.		Winds.	Weather, &c.
	Sun rise.	Noon.	2 o'clock.	Sun set.	9 o'clock.	Sun rise.	Noon.	2 o'clock.	Sun set.	9 o'clock.	From Sun set to Sun rise.	From Sun rise to Sun set.		
	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	30,010	30,050	30,020	30,020	30,060	71,0	85,0	86,0	81,0	80,0	,,	,,	S. Easterly.	Clear—dew and the heat sensibly increasing.
2	30,040	30,110	30,040	30,050	30,045	74,0	85,0	84,2	80,2	78,8	,,	,,	S. E.	Clear—dew.
3	30,040	30,080	30,020	30,000	30,044	75,0	84,4	84,4	80,2	80,0	,,	,,	S. E.	Clear.
4	30,020	30,040	30,000	30,000	30,020	69,8	85,0	85,2	80,6	79,5	,,	,,	S. E.	Clear—dew in the morning.
5	30,000	30,029	30 000	30,000	30,010	67,8	84,5	85,2	79.8	78,7	,,	,,	S. E.	Clear—heavy dew.
6	30,000	30,014	29,974	29,972	30,000	70,0	87,7	87,0	80,7	80,0	,,	,,	S. E.	Clear.
7	29,990	30,045	30,020	30,010	30,020	76,0	84,0	85,0	81,0	78,5	,,	,,	S. E.	Clear—warm in the day.
8	30,020	30,070	30,045	30,020	30,088	70,5	85,2	86,0	80,0	78,2	,,	,,	S. E.	Clear—dew and warm in the day.
9	30,100	30,120	30,070	30,042	30,050	66,0	86,4	86.0	80,2	78,2	,,	,,	S. E.	Clear—dew at night.
10	30,060	30,100	30,055	30,040	30,060	69,8	86,0	86 2	79,5	77,0	,,	,,	S. E.	Clear—dew.
11	30,040	30,040	30,000	29,998	30,000	74,0	85,0	84,0	79.3	76,2	,,	,,	S. E.	Clear—dew.
12	30,000	30,030	30,000	29,978	30,030	70,5	86,7	84,5	79 5	78,0	,,	,,	S. E.	Clear and colder weather.
13	30,020	30 060	30,020	30,010	30,025	73,0	84,6	84,0	79,8	79,0	,,	,,	S. E.	Clear—dew and warm.
14	30,050	30,060	30,020	30,000	30,010	72,8	85,0	84,4	80,0	79,0	,,	,,	S. E.	Clear—heavy dew.
15	30,010	30,030	30,000	29,954	30,000	74,0	85,4	85,8	80 6	79,0	,,	,,	S. E.	Clear—dew and hotter weather.
16	29,980	30.010	29,955	29.930	29,988	72,0	85,2	86,0	79,8	77,2	,,	,,	S. E.	Clear—heavy dew.
17	29,950	30.020	30,010	30,000	30,050	71,0	85,8	85,5	80,8	78,5	,,	,,	S. E.	Clear—dew at night.
18	30.040	30,100	30 050	30,030	30 050	74 0	86,0	85,5	80,5	78,0	,,	,,	S. E.	Clear—dew.
19	30,033	30,050	30,040	30,000	30,010	70,0	88,5	87,7	80,0	76,2	,,	,,	S. E.	Clear—dew.
20	30,000	30 020	30,010	30,000	30,010	69,0	91,0	90,0	80,0	79,5	,,	,,	S. E.	Clear—heavy dew and hot for the season.
21	30,000	30,033	30,000	29,998	30,026	68,8	88,2	85,6	80.5	79,0	,,	,,	S. E.	Clear—heavy dew and hot.
22	30,040	30,100	30 040	30,010	30,000	71,5	84 8	84,5	80,5	80,0	,,	,,	S. E.	Clear.
23	30,100	30,120	30 066	30,030	30,080	80,0	84 4	84 0	79,8	79,0	,,	,,	S. E.	Hazy and dew.
24	30,040	30,100	30,045	30,035	30,060	72,2	84.8	84,5	80,5	79,0	,,	,,	S. E.	Clear.
25	30,044	30 060	30.012	30,020	30,050	72,0	86,0	86,0	81,5	78,5	,,	,,	S. E.	Clear—dew.
26	30,020	30,055	30.010	30,010	30,030	73,5	86 8	87,0	80,0	79 5	,,	,,	S. E.	Clear—dew—heat increased.
27	30,020	30,044	30.005	30,000	30,010	68.0	86.6	86.2	81,0	79,8	,,	,,	S. E.	Clear—dew.
28	30.000	30 030	29.974	29,998	29.997	71,0	85,8	87,4	80,8	79,8	,,	,,	S. E.	Clear—and dew.
29	30,000	30.020	30 030	29.977	29 988	72.5	85.2	84,5	81,4	80,4	,,	,,	S. E.	Clear.
30	30,000	30.040	29,976	30.000	30 005	69,0	86 0	86,2	81,5	81.0	,,	,,	S. E.	Clear—heavy dew at night.
31	30,015	30.010	......	29 930	29 988	81,5	86.0	....	81,0	80,5	,,	,,	S. E.	Clear—dew.

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height....	30,120	91,0
Least Height.......	29 930	66,0
Mean...............	30,025	78.05
Extreme Difference.	00,190	25,0

PHASES OF THE MOON.

	D	H.	M.
First Quarter................	7	10	16 M.
Full Moon....................	14	3	8 M.
Last Quarter.................	20	11	2 A.
New Moon...	29	2	48 M.

In this Month

The nearest approach of the Moon to the Earth was on the 13th.
The Moon had receded to the greatest distance on the 27th.

April 1816.

Days.	BAROMETER.					THERMOMETER (exposed to a free Current of air.)					RAIN GAUGE.		WINDS.	WEATHER, &c.
	Sun rise.	Noon.	2 o'clock.	Sun set.	9 o'clock	Sun rise.	Noon.	2 o'clock.	Sunset.	9 o'clock.	From Sun set to Sun rise.	From Sun rise to Sunset.		
	inches.	inches.	inches.	inches	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	29,955	29,970	29 940	29,980	29,945	78,8	88,0	87,5	83,0	82,0	,,	,,	S. Easterly.	Clear—dew and the heat considerable.
2	30,000	30,082	30,000	30 010	30 020	70,8	88.2	83,0	82,0	81,5	,,	,,	S. E.	Clear.
3	30,000	30 042	30,000	30,000	30,040	74.0	86,5	86,2	81,5	81.0	,,	,,	S. E.	Clear.
4	30,030	30.070	30,040	30,018	30,060	72,6	86,8	86,0	82,0	81,5	,,	,,	S. E.	Clear—dew:
5	30,077	30,025	30,000	29,975	29,988	73.5	86.5	85,8	82,0	81,5	,,	,,	S. E.	Clear.
6	29,930	29,985	29 948	29 970	29,955	75,0	85,2	86,7	83,0	81,2	,,	,,	S. E.	Clear—dew.
7	29.988	30 000	29,942	29,940	29 945	74,0	86,2	85,4	82,0	81,0	,,	,,	S. E.	Clear—dew.
8	29 990	30,000	29 935	29,900	29,920	75,0	87,0	86,8	83,4	78,0	,,	,,	S. E.	Clear.
9	29,950	29 960	29.900	29,910	29 910	75,0	88,0	87,0	83,0	82,0	,,	,,	S. E.	Clear.
10	29,930	29,980	29 912	29,900	29,940	75,0	87,0	86,7	82,5	81,5	,,	,,	S. E.	Clear—dew.
11	29,948	30 010	30 000	30,005	30,020	75,5	86 5	86,0	83,0	82.6	,,	,,	S. E.	Clear.
12	30.000	30,050	30 000	29.900	29 980	74,0	86,5	85,5	79,8	80,0	,,	,,	S. E.	Clear.
13	30,000	30,030	30 000	29 955	29 960	74,5	87,0	86,5	82,0	82,0	,,	,,	S. E.	Clear—dew.
14	29 960	30.000	29,975	29,922	29 940	75,5	88,0	86,5	83,5	82,5	,,	,,	S. E.	Clear—dew and weather hot.
15	29,955	29,998	29,980	29 920	29 925	77,0	88,0	87,4	84,0	82,2	,,	,,	S. E.	Clear—dew—lightning.
16	29 950	30,000	29,935	29,900	29 930	74,0	88,5	87,7	83,8	83,0	,,	,,	S. E.	Clear—distant lightning.
17	29,950	29,955	29,915	29 885	29,900	73,5	87 7	87,8	83,0	80,0	,,	,,	S. E.	Mosty clear—lightning.
18	......	29 930	29 905	29,865	29,888	....	88,5	88,0	84,0	83,5	,,	,,	Fresh S. E.	Clear—distant lightning.
19	29,900	29,988	29,990	29.984	29 990	74,5	88,2	88,2	83,5	83,0	,,	,,	Fresh S. E.	Clear—distant lightning.
20	29,900	29,930	29.888	29,845	29 850	74 5	88,2	86,8	84,0	83,0	,,	,,	S. E.	Clear.
21	29,900	29 920	29,888	29,880	29.885	74,5	88,0	88,2	83,6	83,0	,,	,,	S. E.	Clear.
22	29,900	29 935	29,900	29,845	29,900	73,0	88,4	87,7	84,0	83,0	,,	,,	S. E.	Clear.
23	29,888	29.945	29 904	29 888	29 920	72,0	87,5	87,0	83,4	83 0	,,	,,	S. E.	Clear.
24	29,930	30,010	30 000	29 916	29 940	74,0	88,2	87,7	84,0	83 5	,,	,,	S. E.	Clear—weather hot.
25	29,900	30,000	29,940	29 924	29 935	74,4	88,0	87,8	84,5	83,5	,,	,,	S. E.	Clear—some distant lightning.
26	29,900	29,935	29,900	29,840	29.846	80,0	88,5	87,0	83,4	83,0	,,	,,	Fresh S. E.	Clear—dew—some lightning.
27	29.900	29 905	......	29 825	29,810	79,8	91,2	....	84,0	83,5	,,	,,	S. E.	Cloudy—lightning.
28	29,900	29 900	......	29.820	29,840	79,5	91,0	....	84 5	84,1	,,	,,	Fresh S. E.	Clear—distant lightning.
29	29.844	29,900	29,845	29,834	29 888	82,0	89,8	89,0	84 0	84,0	,,	,,	Fresh S. E.	Clear and hot weather.
30	29,845	29,920	29 900	29.855	29,900	80,0	89,8	89,0	84,0	84,0	,,	,,	Fresh S. E.	Clear - hot—distant lightning.

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height ...	30,082	91,2
Least Height.......	29 820	70.8
Mean.............	29,951	81,00
Extreme Difference...	00,262	20,4

PHASES OF THE MOON.

	D.	H	M.	
First Quarter............	5	9	43	A.
Full Moon..............	12	0	4	A.
Last Quarter...........	19	2	59	A.
New Moon.............	27	6	52	A.

In this Month

The nearest approach of the Moon to the Earth was on the 10th:
The Moon had receded to the greatest distance on the 23d.

May 1816.

Days.	Barometer.					Thermometer (*exposed to a free Current of air.*)					Rain Gauge.		Winds.	Weather, &c.
	Sun Rise.	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*Sun rise.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*From Sun set to Sun rise.*	*From Sunrise to Sun set.*		
	inches.	inches.	inches.	inches.	inches	deg.	deg	deg.	deg.	deg.	inches.	inches.		
1	29,900	29,930	......	29.900	29,920	81,2	91,2	....	83,8	85 5	”	”	Land and S. E.	Clear.
2	29,925	29,965	29,945	29,910	29 888	80,5	91,5	89,8	84 0	84,0	”	”	Land and S. E.	Clear—hot.
3	29,988	29,990	......	29,930	29.970	80,0	88,5	....	84,5	84,0	”	”	Land and S. E.	Clear.
4	30 000	29,955	29,900	29,900	29,930	80,2	88,8	88,0	84,5	83,5	”	”	Fresh S. E.	Clear.
5	29 940	29,940	29.955	29,844	29,900	81,2	89,0	89,8	84 0	83,0	”	”	Fresh S. E.	Clear.
6	29,910	29,945	29,900	29,845	29 900	81,0	89,4	89,5	84.5	84 0	”	”	S. E.	Clear—hot.
7	......	29.955	......	29,888	29,900	....	89,8	....	85,0	84,0	”	”	S E.	Clear.
8	29 920	29 900	29.905	29,888	......	80,0	89,8	88 0	84 0	....	”	”	Calm and S. E.	Clear.
9	29 900	29.940	29 914	29,888	29,940	80,8	89,0	88,0	85,0	84,0	”	”	Calm and S. E.	Hazy and some rain—Halo round the Moon.
10	29 900	29,920	29,900	29,855	29 860	80,0	89,2	89,0	84,8	83,0	”	”	S. E.	Hazy—Halo round the Moon.
11	29 840	29,845	29,825	29,778	29 800	78,8	85,8	86,4	84,0	83,0	0,8	”	S. E.	Cloudy, lightning to the Westward.
12	29.765	29,800	29,766	29,745	29 800	80,0	88,0	88,0	85,5	84,2	”	”	Mostly calm.	Mostly hazy.
13	29.766	29,778	29 755	29,726	29,735	80,5	92,0	90,2	85,6	84,5	”	”	S. E.	Mostly hazy.
14	29,720	29,778	29.780	29,725	29,755	80,0	93,4	96,2	83,5	87,0	”	”	N. E.	Hazy—lightning.
15	29.740	29,800	29 755	29,745	29,810	81,0	94,0	100,0	89,2	86,0	”	”	Land.	Hazy.
16	29,770	29,810	29 800	29,778	29,818	83 5	99,2	92,5	87,6	86,2	”	”	Land.	Clear and weather hot.
17	29,800	29 820	29,815	29,768	29,800	83,0	97,2	91,4	87,5	86,0	”	”	Land and S. E.	Clear and hot weather.
18	29 766	29 810	29,800	29 778	29,800	83,2	97,6	95,0	88,0	86,0	”	”	Land.	Clear and hot.
19	29,825	29,850	29,840	29,825	29,850	84,0	96.5	93,0	85,5	86,0	”	”	S. E.	Mostly clear—distant lightning.
20	29.900	29,915	29,860	29,888	29,900	81,5	88,8	89,0	84,4	85,0	”	”	Fresh S. E.	Mostly clear.
21	29 900	29,920	29,910	29,856	29,900	82,3	89.8	87,0	85,5	84,0	”	”	S. E.	Clear.
22	29 830	29.900	29,855	29,815	29,860	80,8	94,5	92,8	85,0	85,2	”	”	Calm & S. E.	Clear and hot weather.
23	29 825	29,900	29,846	29,835	29.888	81,5	95,7	92,0	85,5	84,0	”	”	Land & S. E.	Clear.
24	29 900	29,905	29.885	29,860	29.900	82,5	97,4	100,2	86,6	84,5	”	”	Land.	Mostly clear.
25	29,905	29,940	29,872	29,845	29 905	82,0	96,5	100,4	87.5	86,0	”	”	Land.	Clear.
26	29,945	29.920	.....	29,855	29,900	81,5	95,7	.....	88,0	86,0	”	”	Land.	Clear and hot.
27	29,888	29,900	29,888	29.845	29,900	82,0	99.2	96,5	88,0	87.7	”	”	S. E.	Clear.
28	29,888	29,878	29,878	29,848	29,858	83,0	100,7	96,0	89,5	87,5	”	”	Land.	Clear.
29	29.855	29,920	29 864	29,845	29 850	84,0	94.4	93,0	84,5	84.0	”	”	Land & S. E.	Clear.
30	29 900	29.928	29,877	29,865	29 900	82,6	94.5	93,4	84,5	84,4	”	”	Land.	Clear.
31	29,887	29,928	29,866	29 856	29,860	83,0	97,2	95,0	88,0	85,2	”	”	Land & S. E.	Clear and hot.

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height......	30,060	10,07
Least Height.......	29,720	78,8
Mean..............	29,860	89,75
Extreme Difference..	00,280	02,19

Rain	Inches.
Observed....	0,8
Reduced....	0,2

PHASES OF THE MOON.

	D.	H.	M.
First Quarter....................	5	5	29 M.
Full Moon........................	11	9	1 A.
Last Quarter.....................	19	7	56 M.
New Moon........................	27	8	28 M.

In this Month

The nearest approach of the Moon to the Earth was on the 9th.

The Moon had receded to the greatest distance on the 20th.

June 1816.

Days.	BAROMETER.					THERMOMETER (*exposed to a free Current of air.*)					RAIN GAUGE.		WINDS.	WEATHER, &c.
	Sun rise.	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*Sun rise.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*From Sun set to Sun rise.*	*From Sunrise to Sun set.*		
	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	29,900	29,900	29,855	29,860	29,888	84,0	97,0	97,0	88,4	86,6	”	”	Variable.	Clear—the weather hot.
2	29,887	29,918	.....	29,855	29,900	83,8	93,0	....	87,0	86,2	”	”	Land and S. E.	Clear.
3	29,888	29,920	29,888	29,855	29,910	81,5	94,7	91,5	87,0	85,0	”	”	Land and S. E.	Clear.
4	29,888	29,928	29,865	29,900	29,888	82,5	94,0	93,4	88,0	85,6	”	”	Land.	Clear.
5	29,824	29,872	29,842	29,815	29,877	87,7	95,5	92,7	85,0	85,5	”	”	Land.	Clear.
6	29,887	29,900	29,845	29,818	29,855	84.4	95.5	97,6	86.0	85,5	”	”	Land and S. E.	Clear.
7	29,875	29,850	29,855	29,800	29 855	81,5	92.6	96,0	86,0	85,5	”	”	Land.	Hazy.
8	29,828	29,850	29,828	29,800	29,818	82,2	96,0	98,0	87,2	86,0	”	”	Land and S. E.	Clear.
9	29,835	29,845	29,825	29,800	29,820	82,5	95.0	94,0	85,4	84,6	”	”	Land.	Clear.
10	29,805	29,828	29,800	29,788	29,788	82,4	96.0	97,2	85,2	85,0	”	”	Land.	Clear.
11	29,800	29,820	29,900	29,788	29,800	82,5	96,5	99,8	88,5	85,5	”	”	Land.	Clear—extremely hot.
12	29,815	29,825	29,855	29,815	29,835	81,8	95,2	91,2	85,5	84,0	”	”	Land and S. E.	Clear.
13	29,850	29,900	29,898	29,852	29 900	82,0	93,5	90,0	85,2	84,5	”	”	S. E.	Hazy.
14	29,888	29,905	29,855	29,825	29.900	82,5	92,0	90,5	84,0	84,0	”	”	Fresh S. E.	Clear—distant lightning.
15	29,888	29,900	29,855	29,828	29.855	82,5	92,5	91,2	85,5	85,0	”	”	Land and S. E.	Clear—lightning.
16	29,856	29,900	29,878	29,800	29,815	83,2	83,0	83,5	84,6	85,0	”	”	Land and S. E.	Cloudy—lightning.
17	29,788	29,855	29,818	29,798	29,800	82.0	88,0	88.0	84,0	83,6	”	”	Light S. E.	Hazy.
18	29,815	29,830	29,815	29,805	29,800	80.5	93.8	90,0	84.4	85,4	”	”	Land and S. E.	Mostly cloudy.
19	29,825	29,900	29,855	29,818	29,825	83,0	90,0	92,2	90,0	86,0	”	”	Land.	Hazy,—the weather rather cooler.
20	29,818	29,818	29,835	29,815	29,777	84,0	93,4	94,0	87,0	88,0	”	”	Fresh N. W.	Hazy.
21	29,800	29,855	29,738	29,740	29,760	83,5	92,0	93,0	85,0	84,0	”	”	Land.	Hazy.
22	29,788	29,838	29,800	29,760	29 815	83,0	90,5	93,0	87,0	85,5	”	”	Land.	Hazy.
23	29,800	29,815	29,850	29,788	29 828	83,0	93,5	94,2	93,0	88,4	”	”	Land.	Hazy.
24	29,810	29,868	29,815	29,778	29,835	83,5	93,5	95,0	84,5	84,6	”	”	Land.	Clear—distant lightning.
25	29,855	29,856	29.844	29,815	29.860	83,5	93,5	94,5	86,5	85,0	”	”	N. W.	Clear and hot—lightning.
26	29,860	29,900	29,788	29,855	29,866	80,0	90,6	90,2	86,0	83,5	”	”	S. E.	Clear.
27	29,910	29,940	29,900	29,900	29.920	83,0	91,2	90,8	86,6	86,0	”	”	N. E.	Flying clouds.
28	29,930	29,935	29,900	29,845	29,848	81,0	90,0	89,0	85,4	84,5	”	”	Calm and S. E.	Clear.
29	29,888	29,900	29,850	29,830	29,840	81,5	94,2	93,0	86,5	82,2	”	”	Calm and W.	Clear—the heat considerable.
30	29,810	29,810	29,800	29,788	29,760	81,0	89,7	93,8	86,0	84,0	1,8	”	Land and S. E.	Mostly hazy.

	Barometer. Inches.	Thermometer Degrees.
Greatest Height......	29,940	99,8
Least Height........	29,738	80,0
Mean...............	29,839	89.9
Extreme Difference..	00,202	19,8

Rain.	Inches.
Observed........	1,8
Reduced.........	0,45

PHASES OF THE MOON.

	D.	H.	M.
First Quarter.................	3	10	39 M.
Full Moon.....................	10	6	40 M.
Last Quarter..................	18	1	9 M.
New Moon......................	25	7	28 M.

In this Month

The nearest approach of the Moon to the Earth was on the 5th.
The Moon had receded to the greatest distance on the 17th.

July 1816.

Days.	BAROMETER.					THERMOMETER (*exposed to a free Current of air.*)					RAIN GAUGE.		WINDS.	WEATHER, &c.
	Sun rise.	*Noon.*	*2 o'clock.*	*Sun set*	*9 o'clock*	*Sun rise.*	*Noon*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*From Sun set to Sun rise.*	*From Sunrise to Sun set.*		
	inches.	inches.	inches	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	29,820	29,830	29,750	29,788	29,810	81,5	89,5	94,5	92,0	89,0	,,	,,	Land.	Mostly hazy.
2	29,835	29,840	29,800	29,768	29,815	82.5	92,7	94,5	93,0	90,0	,,	,,	N. W.	Clear.
3	29,800	29,800	29,745	29,755	29,815	84,0	93,0	94,5	87.5	87,0	,,	,,	Land & fr. S. E.	Cloudy and some rain.
4	29,800	29,818	29,805	29,775	29,800	83,0	89,8	90,5	85,6	85,5	,,	,,	Land.	Cloudy—halo round the Moon.
5	29,805	29,812	29,755	29,758	29,765	81.2	90,2	91,0	83.6	85,0	,,	,,	Land.	Mostly cloudy.
6	29,800	29,845	29,810	29,800	29.810	84,0	88,2	91,0	90 2	86,0	,,	,,	Land.	Cloudy.
7	29,855	29 900	29,845	29,820	29 850	83,0	92,4	94,0	83.0	84.0	,,	,,	N. W.	Hazy.
8	29,880	29,788	29,845	29,800	29,855	83.0	92 0	92,5	85.5	85,0	,,	,,	Land.	Clear.
9	29,820	29,860	29,820	29,835	29,844	80.0	89,8	88,9	85.0	84,0	,,	,,	Land.	Hazy.
10	29,900	29,885	29,862	29,850	29,910	83,0	89,5	92,4	84,2	84,0	,,	,,	Land.	Cloudy.
11	29,900	29,915	29,844	29,840	29,860	79,0	86,6	89,2	80 0	82,0	,,	,,	Land.	Cloudy and rain.
12	29,850	29,878	29,845	29,850	29,855	80,0	86,2	87,5	84,5	78,0	,,	,,	Land.	Cloudy and rain.
13	29,860	29,900	29,844	29,835	29,915	77,5	87.7	90.4	87,0	85,0	,,	,,	Land.	Hazy.
14	29,940	29,955	29,960	29,940	29,942	80.5	91,2	93,0	83,0	82,0	,,	,,	N. W.	Cloudy and rain.
15	29,970	29,940	29,920	29,920	29,940	80,0	80,5	82,0	85,0	84,0	,,	,,	N. E.	Cloudy and some rain.
16	29,944	29,940	29,918	29,880	29,900	82,8	89,4	90.2	85.5	84,0	,,	,,	Calm & N. W.	Cloudy.
17	29,920	29,935	29,915	29,888	29,900	81,7	88,4	88,8	84,4	84,0	,,	,,	N. W.	Cloudy—lightning.
18	29,910	29,920	29,860	29,862	29,900	78,0	88,5	89,2	83,0	83,0	,,	,,	Land.	Hazy.
19	29,900	29,910	29,875	29,868	29,944	80,5	90,5	92,0	84,2	84,0	,,	,,	S. E.	Cloudy.
20	29,920	29,940	29,900	29,877	29,920	81,0	91,8	94,6	83,5	82,0	,,	,,	Land.	Hazy mostly.
21	29,900	29,920	29,900	29,847	29,900	80,5	87,5	85,6	78 4	80,0	,,	,,	N. W.	Mostly hazy.
22	29,900	29,920	29,888	29,880	29,850	79,0	86,5	86,8	83,5	83,5	,,	,,	Land.	Hazy.
23	29,900	29,905	29,850	29,845	29,900	80.0	88,2	90,0	85,0	83,0	,,	,,	Land.	Hazy.
24	29,900	29,920	29,860	29,868	29 900	80.0	89,0	89,7	86.0	84,2	,,	,,	N. W.	Clear.
25	29,920	29,925	29,900	29,888	29,887	80,0	91,5	87,2	85,2	84.0	,,	,,	Land & S. E.	Hazy—cloudy and rain.
26	29,900	29,920	29,860	29,865	29 930	81,5	90.5	89,2	85,0	84,0	,,	,,	S. E.	Cloudy and rain.
27	29,900	29,908	29,855	29.835	29.872	78.0	87,0	88.5	79,2	79,5	,,	,,	N W.	Cloudy & rain—distant lightning on the S.W. qr.
28	29,855	29,878	29,888	29 828	29,866	78,0	86,8	88.2	79.2	80 0	,,	,,	V. N. W. & S. E.	Cloudy and rain.
29	29,856	29,848	29,800	29 805	29,820	80,0	84,2	87,0	83,5	80,0	,,	,,	N. W.	Cloudy and rain.
30	29,830	29,860	29,888	29,808	29,828	78,0	79,5	81,0	80,4	80,5	,,	,,	N. W.	Cloudy and rain.
31	29,820	29,860	29,830	29,800	29 820	78,4	84,8	86,0	83,5	82,0	,,	,,	N. W. & S. E.	Hazy and rain.

	Barometer.	Thermometer.
	Inches.	Degrees.
Greatest Height.....	29.970	94.0
Least Height........	29.745	77,5
Mean...............	29 8575	86.05
Extreme Difference..	00,225	17,1

	Rain.
	Inches.
Observed......	18,5
Reduced	4,6¼

PHASES OF THE MOON.

	D	H	M.
First Quarter.................	3	2	49 A.
Full Moon.....................	9	5	42 A.
Last Quarter..................	17	6	7 A.
New Moon......................	25	4	30 M.
First Quarter.................	31	7	40 M.

In this Month

The Moon had receded to the greatest distance on the 15th.
The nearest approach of the Moon to the Earth was on the 27th.

August 1816.

Days.	BAROMETER.					THERMOMETER (*exposed to a free Current of air*)					RAIN GAUGE.		WINDS.	WEATHER, &c.
	Sun rise.	*Noon.*	2 *o'clock.*	*Sun set*	9 *o'clock.*	*Sun rise.*	*Noon.*	2 *o'clock.*	*Sun set.*	9 *o'clock.*	*From Sun set to Sun rise.*	*From Sun rise to Sun set.*		
	Inches.	inches.	inches	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches		
1	29 855	29,850	29,800	29,865	29,800	77,5	86,0	87,2	85,5	84,0	2,0	,,	Variable N. W. [to S. E.	Hazy.
2	29 788	29 810	29 766	29,744	29,760	78,0	85,4	86,0	80,0	81,0	,,	0,6	Land, calm, & S E.	Cloudy and rain.
3	29 778	29 815	29 855	29,748	29,800	76,7	83,8	85,0	82,0	78,0	3,6	,,	N. W. and S. E.	Cloudy—thunder and lightning with rain.
4	29 815	29 835	29 812	29,740	29,830	77,0	82,8	76,0	80,0	77,1	2,8	,,	N. W.	Cloudy and rain.
5	29.800	29,830	......	29,800	29,840	77,0	85,5	....	81.0	80,0	1,5	1,6	N. W.	Cloudy and rain.
6	29,835	29 895	29,805	29.755	29,758	79,0	85,0	86,8	82.0	78.0	0,2	,,	N. W. and S. E.	Hazy—cloudy and rain.
7	29,800	29,870	......	29 755	29,820	77,0	86,5	....	86,0	82,0	0,7	,,	N. W. and calm.	Hazy and cloudy.
8	29,800	29,844	29,775	29,750	29,800	78 8	85,5	88,8	87,0	88.8	,,	,,	Land and S. E.	Cloudy and hazy.
9	29,830	29,840	29,818	29,800	29,845	78,0	85 0	88,2	86.5	84,4	,,	,,	Land, calm. & S E.	Hazy and cloudy.
10	29,850	29,855	29,865	29 788	29,830	78,8	89,2	91,8	88,8	85,0	,,	,,	Land and S. E.	Mostly cloudy.
11	29,900	29,910	29 925	29,830	29,870	81,5	87,8	90,0	88,0	84 5	,,	,,	N. W. & calm.	Hazy and cloudy.
12	29 900	29,930	29 885	29,833	29,870	80,0	89,8	91,8	86,0	82,8	,,	,,	Land and S. E.	Clear and hazy alternately.
13	29,855	29,875	29,850	29,820	29,850	80,3	89,8	91,2	87,2	84,0	,,	,,	Land and S. E.	Hazy.
14	29.844	29,900	29,835	29,830	29,866	80,0	89,4	90,8	83,5	82,0	,,	,,	Land and S. E.	Cloudy and some rain.
15	29,868	29,880	29.800	29,810	29,830	79,0	88,0	87,0	82,0	82,0	,,	0,4	Variable & S. E.	Hazy—cloudy and some rain.
16	29,860	29,877	29.840	29,818	29,820	79,0	86,5	87,5	80,0	83,0	0,4	,,	Land and S. E.	Cloudy.
17	29,860	29,880	29,835	29.820	29,877	80,0	90,0	92,2	86.0	87.7	,,	,,	Land and S. E.	Clear—hazy.
18	29,835	29,878	29,825	29,815	29,820	83,0	87,2	88,5	84.5	84,0	,,	,,	Land and S. E.	Hazy.
19	29,825	29,840	29,800	29,800	29,820	79,0	82,0	82.8	82,0	82,0	,,	,,	Land, calm, & S E.	Cloudy and some rain.
20	29,810	29,840	29 810	29,777	29,800	78,0	86.5	88,0	79,8	80,2	,,	,,	Land and N W.	Cloudy and some rain.
21	29,840	29,855	29 788	29 800	29,810	78,0	88,2	90,5	87,0	86,0	1,0	,,	Land and S. E.	Mostly clear.
22	29,800	29,885	29,792	29,800	29,884	80,5	88,5	90.8	86,0	86,0	,,	,,	Land.	Cloudy.
23	29,870	29,880	29,900	29,945	29,900	80,0	90,6	91,7	82,0	82.5	,,	,,	Land and S E.	Hazy and some rain.
24	29,850	29,940	29 900	29,888	29,910	80,5	88.5	90,0	89,0	86,0	0,4	,,	Land, calm, & S E.	Hazy and cloudy.
25	29,955	29,965	29 900	29,845	29,900	82,0	89,0	90.8	86,6	84.0	,,	,,	Land and S. E	Clear.
26	29,955	29,948	29.910	29,870	29,930	79,5	90,4	92,2	83,0	84,0	,,	0,3	Land and S. E.	Mostly clear and some rain.
27	29,955	29,944	29 900	29,877	29,910	81,2	90,4	92,0	86.5	84,0	,,	,,	Land and S. E.	Mostly clear.
28	29,940	29,960	29 887	29,900	29,950	80.0	90,5	90,1	84,6	84.0	,,	,,	N. W. and S. E.	Mostly cloudy.
29	29,940	29 960	29,918	29,915	29,970	80,8	91,5	88,0	86,0	84,0	,,	,,	Calm and S. E.	Mostly clear.
30	29,945	29 965	29 890	29.900	29,910	78,8	90,5	88,7	84,0	84,0	,,	,,	Land & r. S. E.	Flying clouds.
31	29,910	29 920	29,888	29 866	29,830	80.0	90,0	89 0	84,0	83,0	,,	,,	C. & N. W. & S. E	Mostly clear.

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height.....	29.970	92,2
Least Height........	29.740	76,7
Mean..............	29,855	84.45
Extreme Difference..	00,230	15,5

Rain.	Inches.
Observed.........	15.5
Reduced..........	3,8¼

PHASES OF THE MOON.

	D.	H	M.
Full Moon..................	8	6	39 M.
Last Quarter................	16	10	19 M.
New Moon...................	23	0	27 A.
First Quarter................	30	3	4 M.

In this Month.

The Moon had receded to the greatest distance on the 12th.

The nearest approach of the Moon to the Earth was on the 24th.

September 1816.

Days.	BAROMETER.					THERMOMETER (*exposed to a free Current of air.*)					RAIN GAUGE.		WINDS.	WEATHER, &c.
	Sun rise.	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*Sun rise.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*From Sun set to Sun rise.*	*From Sun rise to Sun set.*		
	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	29,930	29.930	29 950	29.900	29,920	80,5	90,4	91,8	85,5	84,0	,,	,,	Calm and N. W.	Hazy and clear alternately, with rain.
2	29,910	29,930	29,878	29,860	29,920	78.0	87,5	89.8	84,0	84,0	2,8	,,	Calm and N. W.	Mostly clear.
3	29,900	29.925	29,880	29,870	29,910	79,0	90,0	91,2	85,0	84,0	,,	,,	Calm and N. W.	Mostly clear.
4	29,910	29,940	29,860	29.866	29,900	78,0	87,8	91,0	86,0	84,5	,,	,,	N. W.	Mostly hazy.
5	29,900	29,910	29,915	29,844	29.880	80,0	90,2	90,0	85,2	84,5	,,	,,	Variable.	Hazy and cloudy.
6	29,855	29,900	29,888	29,855	29,915	79.0	89,2	90,0	85,5	84,0	,,	,,	N. to W. & S. E.	Cloudy and hard rain.
7	29,900	29,878	29.847	29 850	29,900	74.5	83,4	84,0	82,5	82 0	12,0	,,	N. E. and calm.	Cloudy and rain.
8	29,880	29,900	29,880	29,855	29,900	78,0	86 0	88,0	82,0	82,0	,,	,,	N. W. and calm.	Hazy and cloudy.
9	29,900	29.915	29,900	29.875	29,900	80,2	85,6	87,8	83,5	82,5	,,	,,	N. W.	Cloudy.
10	29,840	29,910	29,920	29.900	29.875	80,2	86,0	87,0	84.0	84,6	,,	,,	N. W. and S. E.	Mostly cloudy.
11	29,880	29.878	29,864	29.880	29.900	80,0	86.5	87,0	84,5	83,0	,,	,,	N. W.	Cloudy and hazy.
12	29,880	29.910	29,940	29,810	29.830	79.0	85,5	88,0	87,0	84,5	,,	,,	N. W. and S. E.	Hazy.
13	29.850	29,888	29,815	29,788	29 845	78,6	89,8	92,0	90,0	84,5	,,	,,	N. W. and S. E	Hazy.
14	29.855	29,860	29 787	29,800	29,788	80,0	88,5	91,0	87,5	84,0	,,	,,	N. W. and S. E.	Hazy and cloudy.
15	29 820	29.840	29.800	29.766	29,800	80,0	90,2	88,3	85.0	83,0	,,	,,	N. W. and S. E	Clear and cloudy.
16	29,825	29.860	29.800	29,820	29.866	83,0	92.0	93,3	80 5	80,2	,,	0,4	N. W.	Cloudy and some rain.
17	29,900	29,925	29.830	29,885	29.900	80,0	88,0	90,0	82,0	79,0	0,4	0,5	N. W. and S. E.	Cloudy and rain—thunder and lightning.
18	29.888	22,930	29.920	29,870	29,900	77,0	83.8	85,0	84,0	84,4	7,5	,,	Calm.	Cloudy and rain.
19	29.910	29,925	29,950	29,835	29,870	78,0	78,8	79,8	79,8	77,0	5,0	0,5	N. W.	Cloudy and some rain.
20	29.960	29,915	29,880	29,840	29,900	78.0	86,0	83,5	84,0	82,8	,,	,,	N. W.	Cloudy.
21	29.860	29.940	29,850	29,880	29,910	78,0	86,0	86,5	84 5	82,0	,,	,,	N. W.	Hazy and hard rain.
22	29.910	29,900	.. ...	29,845	29,855	77,0	86,0	....	80,0	80,5	5,2	0,4	Calm.	Cloudy and some rain.
23	29,880	29,910	29.855	29,830	29,860	79,2	83,3	86,0	83,0	81,0	,,	,,	Calm and N. W.	Hazy.
24	29,910	29.920	29,855	29,830	29,900	77,8	87,8	84,5	83,0	82,0	,,	,,	S. E.	Hazy.
25	29.910	29 930	29,900	29,885	29.888	79,0	88,2	88,0	82,0	82,4	0,5	,,	S. E.	Cloudy and some rain.
26	30.000	30,010	29,968	29,920	30.000	79 0	85,7	88,5	82,5	82,6	1,0	,,	N. W. and S. E.	Hazy and some rain.
27	30.020	30,028	30,000	29.955	29 998	78,0	85,7	87,2	82.5	81,5	,,	,,	S. E.	Hazy and clear.
28	30,020	30,000	29,920	29 998	29,945	78,8	87,5	89,8	84,0	82,5	,,	,,	Calm and S. E.	Clear.
29	30,000	29.955	29,990	29,915	29,955	79,8	89.8	91,8	84,0	82,0	,,	,,	N. W.	Clear.
30	30,000	30,005	29,990	29,945	29,955	79,0	88,5	92,5	83,3	82.5	,,	,,	S. E.	Clear—distant lightning.

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height.....	30,028	93,3
Least Height........	29,766	74 5
Mean................	29,897	83 9
Extreme Difference..	00,262	18,8

	Rain Inches.
Observed...........	36.2
Reduced..........	9½

PHASES OF THE MOON.

	D.	H.	M.	
Full Moon........................	6	9	43	A.
Last Quarter.....................	15	1	8	M.
New Moon........................	21	8	24	A.
First Quarter.....................	28	1	46	A.

In this Month

The Moon had receded to the greatest distance on the 8th.

The nearest approach of the Moon to the Earth was on the 21st.

October 1816.

Days.	Barometer.					Thermometer (exposed to a free Current of air.)					Rain Gauge.		Winds.	Weather, &c.
	Sun rise.	Noon.	2 o'clock.	Sun set.	9 o'clock.	Sun rise.	Noon.	2 o'clock.	Sun set.	9 o'clock.	From Sun set to Sun rise.	From Sun rise to Sun set.		
	inches.	inches.	inches	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	30,000	30,010	29, 90	29,948	29,980	79,0	88,4	94,0	84,2	83,0	„	„	South Easterly.	Clear.
2	29,998	30,000	29,930	29,933	29,970	80,0	88,5	88,0	83,0	82,5	„	„	S. E.	Cloudy, and some rain.
3	29,968	29,978	29,940	29,944	30,000	81,5	89,8	89,5	85,2	83,0	„	„	S. E.	Clear.
4	30,000	30,005	29,945	29,955	30,000	79,8	88,4	87,2	85,6	84,4	„	„	S. E.	Clear—heavy dew in the morning.
5	30,000	30,020	29,960	29,958	30,010	82,5	88,0	86,0	85,5	83,0	„	„	Calm and S. E.	Hazy and clear.
6	30,000	30,020	29,998	29,986	30,010	80,0	87,5	86,3	83,0	82,0	„	„	S. E.	Clear—dew.
7	30,020	30,050	30,000	30,010	30,020	80,5	88,8	87,7	84,5	82,0	„	„	S. E.	Clear—dew.
8	29,998	30,040	29,978	30,000	30,010	81,0	89,0	88,0	83,0	83,0	„	„	S. E.	Clear.
9	30,010	30,030	30,000	29,998	30,010	79,5	88,0	86,0	82,0	83,0	„	„	S. E.	Clear mostly—lightning.
10	30,000	30,020	30,000	29,990	30,040	78,0	90,2	90,0	85,5	81,5	„	„	Calm.	Clear—dew.
11	30,020	30,030	30,010	30,010	30,000	77,0	88,0	88,2	84 5	83,0	„	„	N. E.	Clear—dew.
12	30,010	30,060	30,006	30,010	30,050	73,0	86,5	86,0	83,0	82,0	„	„	Variable.	Clear—dew.
13	30,020	30,050	.....	30,030	30,070	77,7	85,2	....	83,0	83,3	„	„	N. E.	Cloudy and rain.
14	30,100	30,105	30,050	30,040	30,100	78,0	82,0	78,5	80 4	80,0	4,0	0,4	N. E.	Cloudy and some rain.
15	30,100	30,120	30,070	30.080	30,120	77,8	84,2	84,0	79 8	80,0	1,2	„	N. E.	Cloudy and some rain.
16	30,100	30,100	30,050	30,040	30,110	78,8	85,0	85,0	84,0	84,4	2,5	„	N. E.	Clear and cloudy—rain.
17	30,040	30,050	30,000	30,000	30,005	79,0	83,5	83,5	81,5	81,8	1,0	„	N. E.	Mostly clear—lightning.
18	30,000	30,044	30,010	29,998	29,998	79,8	85,8	83 0	79,0	79,6	„	„	N. E.	Cloudy, and the weather comparatively cool.
19	30,000	30,044	30,000	29,975	30,000	78,0	81,5	83,0	80,2	80,6	„	„	N. E.	Cloudy and rain.
20	30,000	30,010	......	29,976	30,000	78 0	87,5	....	83,0	79,2	1,6	„	N. E.	Clear.
21	29,975	29,980	29,998	29,945	29,975	78.0	84,0	84,5	80,5	79,8	„	„	N. E.	Clear—dew.
22	30,000	30,010	30,000	29,988	30,010	77,4	86 0	86,4	82,4	79,5	„	„	N. E.	Clear.
23	30,000	30,055	29,988	30,000	30,050	78,0	85,5	84,8	80,4	80,0	„	„	N. E.	Clear.
24	30,000	30,020	30,010	30,000	30,010	78,0	86,2	84,5	80,0	80,0	„	„	N. E.	Hazy—dew.
25	30,000	30,020	30 000	29,975	30,020	80,0	84,4	84,5	82,0	80,2	„	„	N. E.	Cloudy.
26	30,005	30,040	30,020	30,040	30,070	78,0	86,0	80,4	80,0	78,8	„	„	N. E.	Cloudy.
27	30,040	30,070	.....	30,030	30,100	78,0	85,0	....	79,8	79,5	„	„	N. E.	Cloudy and some rain.
28	30,050	30,070	30,000	30,020	30,040	78,8	82,0	80,7	78,3	80,0	3,8	0,4	N. E.	Cloudy and some rain.
29	30,020	30,030	30,000	30,000	30,040	79,8	84,0	83,0	82,0	80,5	0,5	0.8	N. E.	Cloudy and rain.
30	30,040	30,060	30,020	30,010	30,088	77,8	81,0	81,5	80,5	77,0	2,6	3·0	N. E.	Cloudy and rain.
31	30,060	30,100	30,040	30,030	30,070	77,5	82,0	82,0	80,5	80,2	3,0	2,5	N. E.	Cloudy and rain.

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height.....	30.120	94.0
Least Height.......	29,930	73.0
Mean	30 025	83.5
Extreme Difference...	00,190	21,0

Rain.	Inches.
Observed.......	27.3
Reduced.......	6.8¼

PHASES OF THE MOON.

	D.	H.	M.	
Full Moon..........	6	2	40	A.
Last Quarter........	14	1	50	A.
New Moon..........	21	5	19	M.
First Quarter........	28	4	19	M.

In this Month

The Moon had receded to the greatest distance on the 5th.

The nearest approach of the Moon to the Earth was on the 20th.

November 1816.

Days.	BAROMETER.					THERMOMETER (*exposed to a free Current of air.*)					RAIN GAUGE.		WINDS.	WEATHER, &c.
	Sun rise.	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*Sun rise.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*From Sun set to Sun rise.*	*From Sun rise to Sun set.*		
	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	30,060	30,050	30,020	30,010	30,040	78,0	84,4	84,2	79,5	79,0	0,4	2,2	N. Easterly.	Mostly cloudy and rain.
2	30,0045	30,088	30,040	30,050	30,088	79,0	80,5	82,6	80,8	81,2	1,0	0,2	N. E.	Cloudy—rain—rainbow in the morning.
3	30,100	30,130	30,100	30,100	30,110	77,8	81,2	82,0	76,2	76,0	3,0	9,2	N. E.	Cloudy and rain.
4	30,060	30,110	30,055	30,060	30,100	78,0	82,0	81,6	79 2	78,0	0,6	,,	N. E.	Cloudy.
5	30,050	30,070	30,015	30,010	30,040	76,0	80,2	80,6	79,5	79,0	,,	,,	N. E.	Cloudy.
6	30,020	30,050	30,010	30,020	30,010	78,8	83,5	82,0	80,0	80,0	,,	,,	N. E.	Cloudy.
7	30,000	30,100	30,045	30,040	30,100	80,0	82,0	82,0	80,0	77,2	,,	,,	N. E.	Mostly hazy.
8	30,030	30,089	30,030	30,035	30,060	75,5	84,0	84,0	80,5	79,8	,,	,,	N. E.	Clear—dew.
9	30,055	30,050	30,020	30,000	30,015	78,0	83,5	83,0	80,5	78,8	,,	,,	N. E.	Hazy.
10	30,000	30,030	......	29,983	30,020	78,0	82,0	....	79,2	79,0	,,	,,	N. E.	Cloudy and some rain.
11	29,988	30,000	29,935	29,940	29,920	78,9	76,2	76,8	77,5	77,0	0,4	6,0	N. E.	Cloudy and rain.
12	20,930	29,945	29,940	29,920	30.000	76,0	80.4	80,5	79,2	79,0	4,0	0,8	S. E.	Cloudy and rain.
13	29,940	30,010	29,944	29,925	29,950	76,0	78,2	80,0	79,2	79 0	9,6	,,	S. E.	Cloudy and rain.
14	29,960	30,000	29,950	29,940	30,000	77,0	80,2	83,0	78,2	78,0	0,8	0,2	S. E.	Cloudy and rain.
15	29,965	30,020	30,000	30,005	30 660	78,0	85,6	84,0	81,5	80,0	,,	,,	S. E.	Clear.
16	30,020	30,088	30,025	30,010	30,050	79,0	83,3	83,0	81,0	79,0	,,	,,	S. E. and N. E.	Cloudy and hazy alternately.
17	30,040	30,060	30,088	30,010	30,040	74,0	84,2	85,5	80,0	78,5	,,	,,	N. E.	Hazy.
18	30,030	30,050	30,010	30,010	30,025	76,0	85,0	84 0	81,5	80,2	,,	,,	N. E.	Hazy—dew in the morning.
19	30,020	30,070	30,020	30,025	30,060	77,0	85,4	83,8	82,2	81,0	,,	2,8	N. E.	Clear.
20	30,020	30,070	30,055	30,050	30 060	78,0	85,0	84,2	81,5	80,0	,,	0,4	N. E.	Cloudy and some rain.
21	30,100	30,102	30,105	30,060	30,088	78,0	83 0	81,0	80,5	80,0	0,5	7,2	N. E.	Cloudy and rain.
22	30,000	30,110	30,050	30,060	30,100	79,0	84,5	84,0	81,5	80,8	,,	,,	N. E.	Clear.
23	30,100	30,140	30,110	30,110	30,150	79,0	83 5	83,0	81,0	80,5	,,	,,	N. E.	Hazy.
24	30,130	30,145	29,985	30,116	30,140	78,0	83,3	82,6	80,0	79,0	,,	,,	N. E.	Mostly cloudy.
25	30 070	30,110	30 060	30,056	30,100	78,5	83,0	82,0	79,8	79,0	,,	,,	N. E.	Hazy.
26	30.065	30,100	30.060	30,055	30.070	77,5	83,0	82.0	80,0	79 0	,,	,,	Fresh N. E.	Cloudy.
27	30,060	30,130	30,005	30,040	30,070	78,0	89,6	82.2	80,0	79,0	,,	,,	N. E.	Hazy.
28	30,044	30 100	30,040	30,030	30,040	78,5	82,0	81,5	80.2	80 0	,,	,,	N. E.	Hazy and cool weather.
29	30,060	30,120	30,060	30,040	30.050	78,8	81,0	81,0	79,3	78,0	,,	,,	N. E.	Cloudy.
30	30,100	30,138	30.100	30,105	30,130	78,0	81,0	82,5	79,6	77,8	,,	,,	N. E.	Clear—dew.

	Barometer.	Thermometer.
	Inches.	Degrees.
Greatest Height......	30,150	85.6
Least Height.......	29 920	75 5
Mean..............	30,036	80 55
Extreme Difference..	00,230	10,1

Rain
Inches.
Observed..........49.3
Reduced...........12,3¼

PHASES OF THE MOON.

	D.	H.	M.	
Full Moon........................	5	8	39	M.
Last Quarter.....................	13	0	29	M.
New Moon.........................	19	3	44	A.
First Quarter....................	26	10	27	A.

In this Month

The nearest approach of the Moon to the Earth was on the 17th.
The Moon had receded to the greatest distance on the 29th.

December 1816.

Days.	BAROMETER.					THERMOMETER (exposed to a free Current of air)					RAIN GAUGE.		Winds.	Weather, &c.
	Sun rise.	Noon.	2 o'clock.	Sun set.	9 o'clock.	Sun rise.	Noon.	2 o'clock.	Sun set.	9 o'clock.	From Sun set to Sun rise.	From Sunrise to Sun set.		
	inches.	inches.	inches.	inches.	inches.	deg	deg.	deg	deg.	deg.	inches.	inches.		
1	30,116	30,140	30,075	30,100	30,160	76,5	78,8	80,8	78,0	78 0	"	"	N. Easterly.	Mostly clear.
2	30,100	30,160	30,120	30,100	30,130	74 5	80,4	81,0	78,2	75.5	"	"	N. E.	Hazy—dew, and cool weather.
3	30.110	30,136	30,100	30,076	30,070	74.0	78 9	82.6	82,2	79 2	"	"	N. E.	Clear—dew.
4	30,130	30.165	30,130	30,120	30,160	74,2	82,4	83,0	79 0	76,5	"	"	N. E.	Clear—cool.
5	30,160	30,150	30,120	30,110	30,120	74.0	82,0	82,0	78.5	75,5	"	"	N. E.	Clear.
6	30,140	30 140	30,110	30,120	30,150	73,0	84,5	84,2	79,0	79,0	"	"	N. E.	Clear—dew at night.
7	30,140	30,160	30,120	30,140	30,200	74,5	83,0	81,5	79,8	78.0	"	"	N. E.	Clear and cloudy.
8	30.200	30,210	30,160	30.120	30,200	77,8	82,0	83,0	79,2	78.2	"	"	N E.	Hazy and comparatively cold weather.
9	30.150	30,140	30,140	30 120	30,150	77,0	81,6	81,0	79,2	78 0	"	"	N. E.	Clear and hazy.
10	30,075	30,070	30,040	30 050	30,070	75,0	83,0	82,0	79,8	79,0	"	"	N. E.	Cloudy.
11	30.045	30.055	30,014	30,020	30,060	76,7	81 0	78,2	79,0	78,8	"	2,0	N. E.	Cloudy and some rain.
12	30.040	30 064	30,028	30,020	30,040	77,8	81,8	80 5	79.2	80,0	1,8	"	Fresh N. E.	Cloudy and cold weather.
13	30,030	30,040	30,020	30.025	30,060	77,7	83,0	83,2	80,2	80.0	"	"	N. E.	Cloudy.
14	30.020	30,055	30,020	30,022	30,060	79,0	84,2	84 0	81,0	80,0	"	"	N. E.	Clear.
15	30,030	30,040	......	30,000	30,020	79,2	82,6	....	80,5	79,2	"	"	N. E.	Cloudy and rain.
16	30,010	30,035	30,010	30,000	30,020	77,0	84,0	83,0	79,6	78,0	2,0	"	N. E.	Clear.
17	30,010	30,105	30.050	30,040	30,100	78,0	83,0	82.5	79,5	78,0	"	"	N. E.	Clear.
18	30,110	30,130	30,070	30,050	30,100	74,0	81,0	80.7	78,7	77,0	"	"	N. E.	Cloudy.
19	30.100	30,130	30,100	30.070	30,130	74,0	80,4	79,8	77 8	76,0	"	"	N. E.	Clear—dew on the ground.
20	30,110	30,135	30,100	30,100	30,120	69 0	82,2	81.0	78,5	75.3	"	"	N. E.	Clear—dew, and cool.
21	30 160	30,180	30,140	30,140	30,200	70.0	81,5	79,8	78.0	77,0	"	"	N. E.	Clear—dew, and cool.
22	30,160	30 200	30,150	30,140	30,180	73,0	80,8	81,5	77,8	76,2	"	"	N. E.	Mostly clear and cool—dew in the morning.
23	30.150	30,170	30,120	30,180	30,170	75,0	81,0	79 8	77,6	74 5	"	"	N. E.	Clear and cold weather.
24	30,170	30,200	30,150	30,130	30,200	73,0	80,0	79 5	78,2	77,9	"	"	N. E.	Hazy—dew and cold.
25	30,140	30,200	30,140	30,145	30,170	74,4	81.5	80,5	78 0	76,2	"	"	N. E.	Flying clouds and hazy—dew at night.
26	30,140	30,160	30.155	30,150	30,140	77,0	82,8	81 5	79,0	75,5	"	"	N. E.	Hazy—dew.
27	30.100	30,100	30,060	30,070	30,080	74,0	81,6	81,0	78.3	78.0	"	"	N. E.	Mostly clear.
28	30,100	30,110	30,055	30.050	30,130	73,0	81,3	81,4	78,8	77.7	"	"	N. E.	Cloudy—dew.
29	30,105	30,170	......	30,130	30,160	76.5	82,8	....	78,0	77,0	"	"	N. E.	Hazy and clear.
30	30,110	30,170	30,120	30,120	30,125	76,0	82.0	83,5	79,4	78.8	"	"	N. E.	Clear and hazy.
31	30,140	30,170	30,118	30,115	30,120	72,0	81,2	80,4	78,0	77,8	"	"	N. E.	Flying clouds—dew.

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height......	30,210	84,5
Least Height........	30,000	69.0
Mean...............	30,105	76.75
Extreme Difference..	00,210	15,5

Rain.	Inches.
Observed.........	5,8
Reduced.........	14½

PHASES OF THE MOON.

	D.	H	M.	
Full Moon........................	5	2	12	M.
Last Quarter.......................	12	9	13	M.
New Moon........................	19	3	58	M.
First Quarter......................	26	7	13	A.

In this Month

The nearest approach of the Moon to the Earth was on the 15th.
The Moon had receded to the greatest distance on the 27th.

TABLE of the MEAN, GREATEST, *and* LEAST *Heights ; with the* EXTREME DIFFERENCES, *of the* BAROMETER, *and* THERMOMETER-*exposed ; together with the* FALL *of* RAIN *at the* MADRAS OBSERVATORY *in the year* 1816.

MONTHS.	BAROMETER.				THERMOMETER (*exposed to a free Current of air.*)				RAIN GAUGE.	
	Mean.	*Greatest.*	*Least.*	*Extreme difference.*	*Mean.*	*Greatest.*	*Least.*	*Extreme difference.*	*Observed.*	*Reduced.*
	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	inches.	inches.
January	30,136	30,228	30,044	00,184	74,75	83,5	66,0	17,5	0,4	0,1
February	30,105	30,210	30,000	00,210	75,15	85,0	68,0	17,1	02,9	0,7¼
March	30,025	30,120	29,930	00,190	78,05	9,10	66,0	25,0	”	”
April	29,951	30,082	29,820	00,262	81,00	91,2	70,8	20,4	”	”
May	29,860	30,000	29,720	00,280	89,75	100,7	78,8	02,19	0,8	0,2
June	29,839	29,940	29,738	00,202	89,9	99,8	80,0	19,8	01,8	0,45
July	29,8575	29,970	29,745	00,225	86,05	94,6	77,5	17,1	18,5	4 6¼
August	29,855	29,970	29,740	00,230	84,45	92,2	76,7	15,5	15,5	3,8¾
September	29,897	30,028	29,766	00,262	83,9	93,3	74,5	18,8	36,2	9,½
October	30,025	30,120	29,930	00,190	83,5	94,0	73,0	21,0	27,3	0,8¼
November	30,035	30,150	29,920	00,230	80,55	85,6	75,5	10,1	49.3	12,3¼
December	30,105	30,210	30,000	00,210	76,75	84,5	69,0	15,5	05,8	1,4½

	BAROMETER.	THERMOMETER EXPOSED.	RAIN GAUGE.	
			Observed	*Reduced.*
	inches.	degrees.	inches.	inches.
General Mean	29,974	82,0	15,85	39,6¼
Greatest Height	30,228	100,7		
Least Height	29 720	66,0		
Extreme Difference	00,508	034,7		

During this year.

The Moon was nearest to the Earth on the 13th of March and 21st of September.

The Moon was at the greatest distance from the Earth on the 27th of March and the 8th of September.

METEOROLOGICAL TABLES.

PART III.

METEOROLOGICAL JOURNAL

KEPT IN THE

MADRAS OBSERVATORY

IN THE YEAR 1817.

January 1817.

Days.	Barometer.					Thermometer (*exposed to a free Current of air*)					Rain Gauge.		Winds.	Weather, &c.
	Sun rise.	*Noon.*	2 *o'clock.*	*Sun set.*	9 *o'clock.*	*Sun rise.*	*Noon.*	2 *o'clock.*	*Sun set.*	9 *o'clock.*	*From Sun set to Sun rise.*	*From Sunrise to Sun set.*		
	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	30,150	30,160	30,120	30,100	30,110	71,2	82,5	83,3	79 0	78,5	„	„	N. Easterly.	Mostly clear.
2	30,115	30,150	30,100	30,100	30,170	76,0	81,5	81,2	79 0	76,8	„	„	N. E.	Hazy.
3	30,160	30,160	30,130	30,120	30,150	73,0	83,3	83,4	78,0	76,0	„	„	N. E.	Hazy and some dew—the weather comparatively cold.
4	30,100	30,140	30,100	30,140	30,150	74,5	83,4	82,8	78,0	75,0	1,4	„	N. E.	Cloudy and rain.
5	30,130	30,150	......	30,100	30,140	74,0	80,0	....	78,0	76,0	„	„	N. E.	Flying clouds.
6	30,140	30,170	30,135	30,138	30,160	71,5	78,0	78,5	75,0	74,5	„	„	N. E.	Cloudy, cool—dew at night.
7	30,150	30,188	30,155	30,140	30,150	71,0	80,5	79,5	77,0	76,8	„	„	N. E.	Hazy—dew and cold weather for this country.
8	30,150	30,165	30,130	30,130	30,170	71,0	81,2	80,0	78,0	77,0	„	„	N. E.	Hazy and cool.
9	30,166	30,145	......	30,120	30,144	74,0	80,5	.....	75,0	76,8	„	„	N. E.	Hazy.
10	30,120	30,140	30,125	30,120	30,140	74,0	80,6	76,0	77,0	77,0	„	„	N. E.	Clear and hazy.
11	30,140	30,200	30,140	30,145	......	75,6	80,0	79,0	78,0	.....	„	„	N. E.	Hazy and cold.
12	30,160	30,180	30,180	30,140	30,200	75,5	81,6	81,2	78,0	77,0	„	„	N. E.	Hazy.
13	30,160	30,200	30,164	30,145	30,220	76,0	84,5	81,7	78,0	77,0	„	„	N. E.	Mostly clear.
14	30,160	30,200	30,145	30,150	30,200	73,5	80,5	80,7	78,0	75,5	„	„	N. E.	Clear.
15	30,170	30,200	......	30,145	30,158	73,0	81,5	....	77,0	76,0	„	„	N. E.	Clear and cold.
16	30,160	30,188	30,145	30,148	30,200	72,0	81,5	81,6	76,0	74,0	„	„	N. E.	Clear and dew.
17	30,180	30,210	30,142	30,155	30,160	72,0	81,4	81,2	77,5	76,0	„	„	N. E.	Clear—dew and cold for Madras.
18	30,160	30,210	30,150	30,174	30,210	69,0	80,5	80,2	77,0	74,6	„	„	N. E.	Clear.
19	30,140	30,240	30,200	30,210	30,240	70,0	80,8	81,5	78,0	74,5	„	„	Calm.	Clear—dew and cold.
20	30,188	30,242	30,200	30,200	30,210	70,0	81,5	81,5	78,0	76,9	„	„	Calm and N. E.	Clear—dew and cold.
21	30,250	30,210	......	30,185	30,200	70,0	81,0	.....	77,5	76,5	„	„	N. E.	Hazy.
22	30,215	30,185	30,146	30,144	30,180	75,5	80,7	80,0	77,0	76,7	„	„	N. E.	Clear.
23	30,145	30,170	30,170	30,144	30,174	72,7	79,7	79,7	78,0	76,6	„	„	N. E.	Clear.
24	30,180	30,174	30,142	30,134	30,174	72,5	83,7	82,7	79,4	....	„	„	N. E.	Clear.
25	30,155	30,182	30,130	30,135	30,160	72,2	83,6	81,7	78,6	77,4	„	„	N. E.	Clear and dew.
26	30,160	30,200	30,130	30,140	30,220	69,0	83,8	83,0	78,2	77,0	„	„	N. E.	Clear and dew.
27	30,200	30,205	30,155	30,155	30,200	69,0	82,7	83,3	78,7	77 0	„	„	N. E.	Clear—hazy at times—heavy dew—and cold.
28	30,170	30,205	30,150	30,140	30,200	70,0	82,2	82,8	78,2	77,5	„	„	S. E.	Clear and dew.
29	30,170	30,215	30,160	30,156	30,188	68,0	81,6	82,2	77,8	76,6	„	„	Calm.	Claar—heavy dew and cold.
30	30,200	30,220	30,160	30,165	30,210	70,0	82,6	83,0	78,0	73,5	„	„	S. E.	Clear—dew and cold.
31	30,210	30,210	30,185	30,140	30,185	69,8	83,4	83,0	77,5	75,0	„	„	S. E.	Clear and cold weather.

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height.....	30,250	83,8
Least Height.......	30,100	68,0
Mean..............	30.175	75,9
Extreme Difference.,	00,150	15.8

	Rain. Inches.
Observed......	1,4
Reduced	0,3½

PHASES OF THE MOON.

	D.	H.	M.	
Full Moon.................	3	6	5	A.
Last Quarter................	10	5	3	A.
New Moon..................	17	5	59	A.
First Quarter...............	25	5	4	A.

In this Month

The nearest approach of the Moon to the Earth was on the 9th.
The Moon had receded to the greatest distance on the 24th.

February 1817.

Days.	Barometer.					Thermometer (exposed to a free Current of air.)					Rain Gauge.		Winds.	Weather, &c.
	Sun rise.	Noon.	2 o'clock.	Sun set.	9 o'clock.	Sun rise.	Noon.	2 o'clock.	Sunset.	9 o'clock	From Sun set to Sun rise.	From Sun rise to Sun set.		
	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	30,180	30,180	30,200	30,150	30,150	68,0	83,5	81,6	77 5	74,5	,,	,,	S. Easterly.	Clear—heavy dew in the night.
2	30,145	30,150	30,105	30,100	30,110	68,0	83,0	82,0	77,7	75 8	,,	,,	S E.	Clear—dew.
3	30,100	30,125	30,100	30,140	30,160	67 5	82,2	81.5	78 2	75,0	,,	,,	S. E.	Clear—heavy dew.
4	30,165	30,140	30,125	30,140	30,162	71,0	81,8	82 0	77,0	77 0	,,	,,	S. E.	Clear.
5	30,165	30,200	30,150	30,165	30,200	71,0	83,0	83,5	79.0	75,0	,,	,,	S. E.	Clear—dew.
6	30,200	30,205	30,160	30,155	30,200	71,0	82,5	83.0	79.2	78,0	,,	,,	S. E.	Clear and hazy alternately.
7	30,200	30,205	30,125	30,130	30,160	70 0	83,5	82 6	80,0	78,0	,,	,,	S. E.	Clear.
8	30,150	30,200	30,200	30,155	30,200	70,0	84,0	83,5	80,0	79,0	,,	,,	S. E.	Clear.
9	30,210	30,200	30,164	30,160	30,200	74,5	84,4	83,7	79,2	79,0	,,	,,	S. E.	Clear—the weather warm.
10	30,160	30,210	30,160	30,155	30,200	75,0	84,0	85 5	80 2	78 0	,,	,,	S. E.	Clear.
11	30 140	30,160	30,090	30,150	30,120	71,0	82,0	82.6	79,8	78 0	,,	,,	S. E.	Clear.
12	30,110	30,140	30,115	30,150	30,150	71,0	82,5	82,8	79,8	77,5	,,	,,	S. E.	Clear—dew—colder weather.
13	30,155	30,168	30,144	30,150	30,200	70 5	82,5	82.2	79.5	77.5	,,	,,	Variable.	Clear—heavy dew and cool.
14	30,145	30,150	30,110	30,100	30,120	71,5	83,5	83,6	79,0	78,5	,,	,,	S. E.	Clear.
15	30.100	30,095	30,072	30,055	30,088	74,8	84,7	84.4	80,0	79,0	,,	,,	S. E.	Clear—dew.
16	30,100	30,088	30,055	30,070	30,100	70,5	84,8	83,0	79,0	78,0	,,	,,	S. E.	Clear.
17	30,110	30,140	30,150	30,088	30,100	72,0	85,2	85,0	80,8	79,0	,,	,,	S. E.	Clear—hot—dew on the ground in the morning.
18	......	30,066	30,035	30,005	30,030	.....	86,8	85,0	79.8	78,0	,,	,,	S. E.	Clear.
19	30 050	30,100	......	29,995	29,985	73,0	85,2	.....	79.7	79,0	,,	,,	S E.	Clear.
20	29 980	30,081	30,005	30,000	30,050	72,5	86,5	85 0	81.5	80,5	,,	,,	S. E.	Clear.
21	30 030	30,045	30,040	29,966	30,000	78,0	85,5	85,5	80.5	80,5	,,	,,	S. E.	Clear—dew.
22	30,000	30,005	29,988	30,000	30,004	75,5	86,5	85,5	80,0	80,0	,,	,,	S. E.	Clear—hazy.
23	30,030	30,100	30,000	30,300	30,040	75,0	87,5	87.0	83,0	85,5	,,	,,	S. E.	Clear.
24	30 000	30,170	30,040	30,020	30,080	76,0	87,5	86,0	82,0	80,5	,,	,,	S. E.	Clear—the heat much increased.
25	30 040	30,070	30,075	30,000	30,015	71,5	85,6	84,7	81,4	80,5	,,	,,	Variable.	Clear—dew on the ground in the morning.
26	30,020	30,000	29,985	29,980	30,040	75,0	86,6	85.6	82.2	81,5	,,	,,	S E.	Clear.
27	30,010	30,044	30,015	30,120	30,100	72,0	83,4	83,5	80,5	80,2	,,	,,	S. E.	Clear—hazy.
28	30,000	30,180	30,050	30,020	30,010	75,0	85,6	84,8	82,5	81,0	,,	,,	Variable.	Mostly clear.

	Barometer.	Thermometer.
	Inches.	Degrees.
Greatest Height....	30.300	87,5
Least Height......	29.966	67.5
Mean............	30,133	77,5
Extreme Difference.	00,334	20,0

PHASES OF THE MOON.

	D.	H.	M.	
Full Moon	2	7	36	M.
Last Quarter................	9	1	7	M.
New Moon..................	16	9	40	M.
First Quarter...............	24	1	48	A.

In this Month

The nearest approach of the Moon to the Earth was on the 5th.

The Moon had seceded to the greatest distance on the 21st.

March 1817.

Days.	BAROMETER.					THERMOMETER (*exposed to a free Current of air.*)					RAIN GAUGE.		WINDS.	WEATHER, &c.
	Sun rise.	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*Sun rise.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*From Sun set to Sun rise.*	*From Sunrise to Sun set.*		
	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	30,015	29,988	30,015	30,000	30,080	75 5	84 5	84 6	82,5	81.6	,,	,,	N. Easterly.	Hazy.
2	30,040	30,050	30,030	30,010	30,000	74,5	86.0	86.6	82,2	81,5	,,	,,	N. E.	Clear.
3	30,000	30,020	30 000	29,966	30,050	75,0	86,0	85,5	81,5	81.5	,,	,,	S. E.	Clear.
4	30,000	30,020	30,000	30.000	30,020	81,6	87,2	86 6	82,0	81,6	,,	,,	S. E.	Clear.
5	30,020	......	30,060	30,060	30,120	76,0	....	85,5	82,5	81,5	,,	,,	Variable.	Hazy.
6	30,000	30,040	30,120	30,120	30,100	76,5	85,0	85,5	82,0	80,0	,,	,,	S. E.	Clear.
7	30,120	30,140	30,100	30,120	30,140	75,5	85,6	85.0	81,6	80,5	,,	,,	E.	Clear.
8	30,100	30,150	30,085	30,082	30,160	75,0	84 6	84 5	81.6	80,5	,,	,,	Variable.	Clear.
9	30,082	30,140	30.085	30,082	30,100	78,0	86.2	85,0	80.7	80,4	,,	,,	Variable.	Clear—flying clouds.
10	30,070	30.120	30,050	30,035	30,040	71.5	84 5	84,0	79,5	78,5	,,	,,	S. E.	Clear.
11	30,080	30,080	30,050	30,034	30,040	70.0	86,2	85.0	81,0	80,0	,,	,,	S. E.	Clear.
12	30,070	30.110	30,055	30,060	30,100	79.0	85,0	84,8	80.6	77,5	,,	,,	S. E.	Clear.
13	30.100	30 090	30,055	30.044	30,068	72.5	84.7	85,2	82,5	80.0	,,	,,	S. E.	Clear.
14	30.040	30,140	30,166	30,115	30,140	79 5	85,0	83.8	80 0	81,0	,,	,,	S. E.	Clear—hazy at times.
15	30,120	30,150	30,110	30,115	30,150	78,5	88,5	86,8	83,0	81 5	,,	,,	S. E.	Clear.
16	30,105	30.140	30,100	30,110	30,100	72,0	86,2	86,5	82 0	81,5	,,	,,	S. E.	Clear.
17	30.100	30.120	30,072	30,040	30,010	75,5	85,5	85,4	82 0	81.4	,,	,,	S. E.	Clear.
18	30 100	30,150	30,055	30,040	30 040	75,0	86,2	85,5	82.2	81,2	,,	,,	S. E.	Clear.
19	30,040	30,060	30,034	30.000	30.060	72,0	87,2	86,4	82,0	81,5	,,	,,	S. E.	Clear.
20	30 050	30 060	30.020	30,015	30,060	75,0	87,2	86.7	81,8	81,6	,,	,,	S. E.	Clear.
21	30,080	30,085	30,025	30,040	30.070	78,0	88,2	87.7	82,0	81,0	,,	,,	S. E.	Clear.
22	30,040	30,035	30 020	30,015	30,020	78,0	89.0	88 5	83,3	82,2	,,	,,	Fresh S. E.	Clear.
23	30.010	30,050	30 025	30,010	30.015	79,2	86 4	86,5	82,5	81,5	,,	,,	Fresh S. E.	Clear.
24	30,020	30,060	30,045	30.024	30,060	78.0	87.7	86,0	82,0	81,2	,,	,,	S. E.	Clear.
25	30,055	30 100	30 015	30.024	30,025	77 0	86,5	85 8	82.0	82.0	,,	,,	S. E.	Clear—comparatively hot.
26	30,020	30,065	30 022	30,010	30,020	78,2	86.2	85 5	81,5	80,6	,,	,,	S. E.	Clear.
27	30.030	30 010	30.005	30,000	30,010	76 5	87.5	87 0	82,8	82,0	,,	,,	Fresh S. E.	Clear—the heat increased.
28	30,000	30 010	29 972	29 965	30,000	78,0	88.0	87,4	82,8	82,0	,,	,,	Fresh S. E.	Clear—dew.
29	29,960	30 010	29 956	29 940	30.000	79.0	90 0	88,5	83,5	82,5	,,	,,	S. E.	Clear.
30	30,000	30,008	29 992	30 000	30,050	79.0	87 5	87,0	83,0	81,5	,,	,,	S. E.	Clear.
31	30.000	30,120	30 047	30 031	30,050	80,0	87,0	86,0	81,6	80,5	,,	,,	S. E.	Clear.

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height....	30 166	90,0
Least Height.......	29.940	70 0
Mean.............	30,053	80,0
Extreme Difference.	00,226	20,0

PHASES OF THE MOON.

	D.	H.	M.
Full Moon.....................	3	6	56 A.
Last Quarter...................	10	10	14 M.
New Moon...	18	2	32 M.
First Quarter...................	26	7	23 M.

In this Month

The nearest approach of the Moon to the Earth was on the 5th.
The Moon had receded to the greatest distance on the 21st.

April 1817.

Days.	BAROMETER.					THERMOMETER (*exposed to a free Current of air.*)					RAIN GAUGE.		WINDS.	WEATHER, &c.
	Sun rise.	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock*	*Sun rise.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*From Sun set to Sun rise.*	*From Sun rise to Sun set.*		
	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	30,040	30.100	30,140	30.025	30,040	75,5	86 0	87 0	81,5	80,6	"	"	S. Easterly.	Clear.
2	29,988	30,055	30,020	30.005	30,020	73,5	86,5	86,0	82.0	80,5	"	"	S. E.	Clear—and the heat considerable.
3	30,010	30,080	30,055	30,050	30.040	75,5	87,8	86,8	83 0	82,0	"	"	S. E.	Clear.
4	30,070	30,100	30,060	30,075	30,130	77,5	87,0	86,0	83,0	82,5	"	"	S. E.	Hazy.
5	30,100	30,120	30,100	30 088	30,125	74 5	88,7	87,8	83,0	82,2	"	"	S. E.	Clear—hot weather.
6	30,100	30 008	30.042	30,024	30,040	78.0	87,5	88,5	83,5	81,4	"	"	S. E.	Clear.
7	30.020	30.085	30.000	29,968	30.000	74.5	88,5	88,8	85,0	80,5	"	"	S. E.	Clear.
8	30.000	30,025	29 975	29 978	30 000	78,8	91,5	88,7	83.0	80 0	"	"	Variable.	Clear and hot.
9	30,010	30,040	30 000	30 000	30 020	78,0	88,5	87,2	82.8	81.5	"	"	S. E.	Clear.
10	30,040	30,100	30,024	30.010	30,020	78 0	87.3	87,0	84,0	82,5	"	"	Variable.	Clear.
11	30,040	30,050	..... .	30 000	30 010	78,0	87,2	.....	82,8	81,5	"	"	S. E.	Clear.
12	30,000	30,040	30,025	30,000	30,100	78,8	86,2	86,0	82,5	82.0	"	"	S. E.	Clear.
13	30.000	30,020	......	30 1.00	30.000	80,8	86,6	....,	82,5	82,2	"	"	S. E.	Clear.
14	30,020	30,035	30 000	29.955	30.000	78.0	87.2	87,3	83.0	82.0	"	"	S. E.	Clear.
15	30,000	30.040	29.985	29.988	30,000	80,0	89,0	88,8	83,4	83,0	"	"	S. E.	Clear.
16	30,000	29,988	29.968	29,954	29.966	78.8	89.0	88,0	82,8	82,4	"	"	S. E.	Clear— hot weather.
17	29.995	30,030	29 974	29,980	29,960	78.0	88,5	89.0	83,0	82.0	"	"	S. E.	Clear.
18	30,000	30,020	29 974	29.960	30,000	78,0	87,7	87,7	83,5	81,5	"	"	S. E.	Clear.
19	30,015	30,050	29,990	30,000	......	78,7	88,5	89,0	82.5	....	"	"	S. E.	Clear.
20	30.015	30.030	29 984	29,964	....	78.8	87,0	87,4	83,5	.....	"	"	S. E.	Clear and hazy alternately.
21	30,010	29 987	29,968	29,955	......	80,0	89,5	88,0	83.0	....	"	"	Fresh S. E.	Clear and hazy.
22	29,080	30 020	....	29,940	......	80,0	89,2	....	84,4	....	"	"	S. E.	Clear and the heat considerable.
23	29,945	30.010	29,948	29 945	......	80,2	88,2	88,8	83,4	....	"	"	Fresh S. E.	Clear.
24	29,998	30,000	....	29 930	......	77,8	88,5	.....	84,0	....	"	"	S. E.	Clear.
25	......	30,000	....	29,994	30.010	.....	89,8	.....	85,6	83,0	"	"	S. E.	Clear.
26	29.980	29,988	....	29,984	29,915	76,0	82,0	.....	84,0	83,8	"	"	Fresh S. E.	Cloudy mostly.
27	29,955	30 000	29,960	29 940	29,988	84,0	89,5	89,0	84,0	83,0	"	"	Fresh S. E.	Clear.
28	29.966	30.000	29 950	29.930	29,966	80,5	90,5	90,0	84 0	83,3	"	"	Fresh S. E.	Mostly clear.
29	29,988	30,015	30.000	29.955	29,958	81,2	90,5	89.8	84.0	83,8	"	"	Fresh S. E.	Clear.
30	29,960	30,040	30,000	29 954	29,965	80,0	90,0	89,2	84,0	84,0	"	"	Fresh S. E.	Clear.

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height ...	30,140	92.0
Least Height.......	29 915	73.5
Mean.............	30,0275	82.75
Extreme Difference..	00,225	18,5

PHASES OF THE MOON.

	D.	H.	M.	
Full Moon...............	2	4	30	M.
Last Quarter............	8	8	49	A.
New Moon...............	16	7	49	A.
First Quarter............	24	8	44	A.

In this Month

The Moon had receded to the greatest distance on the 16th A.

The nearest approach of the Moon to the Earth was on the 30th P:

May 1817.

Days.	BAROMETER.					THERMOMETER (*exposed to a free Current of air.*)					RAIN GAUGE.		WINDS.	WEATHER, &c.
	Sun rise.	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*Sun rise.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*From Sun set to Sun rise*	*From Sunrise to Sun set.*		
	inches.	inches.	inches.	inches.	inches	deg.	deg.	deg.	d g	deg.	inches.	inches.		
1	29,945	29 960	29 975	29.920	29,990	80,4	90,8	91,5	84 5	84,0	,,	,,	Fresh S. E.	Clear.
2	29,970	30 025	29,960	29,945	29 974	80,2	91,5	90,2	84 5	83,4	,,	,,	Fresh S. E.	Clear, and hazy at times.
3	30,000	30 025	30,045	30,000	30 014	80,0	90,8	89,8	84,2	83,3	,,	,,	Fresh S. E.	Clear.
4	30,030	30,085	......	30 000	29,938	79 5	99,8	....	84,5	84,0	,,	,,	Fresh S. E.	Clear.
5	30,045	30,046	30,040	29,977	30.045	80,6	90,2	89.8	84,5	84,5	,,	,,	Fresh S. E.	Clear and cloudy—distant lightning.
6	30.000	30 060	30,010	30,000	30 005	81,0	89.8	89 7	85,2	84,0	,,	,,	S. E.	Clear and hot weather.
7	30,005	30,025	30,000	29 955	29,970	80 0	89,2	89,0	84,5	84,2	,,	,,	S. E.	Clear and hot.
8	29 980	30 015	......	29,945	30,000	81,4	89,5	....	85 5	84,5	,,	,,	S. E.	Mostly clear.
9	39.005	30,055	30 005	29 960	30.000	80,6	89,8	89.0	85,0	84,8	,,	,,	S. E.	Mostly clear.
10	30.004	30,033	30,000	29,978	29 988	84,0	88,8	88.0	85,5	85.0	,,	,,	S. E.	Clear and hazy.
11	29 975	30.005	29.988	29 970	30.005	81,5	90,0	89,2	85,0	85,0	,,	,,	S. E.	Clear.
12	29 965	29 988	29 955	29,930	30,000	81,0	89,8	89,0	85.5	85,5	,,	,,	S. E.	Hazy.
13	29 988	30 000	30,050	29,920	29 970	80,8	89 8	89,0	85,5	85,0	,,	,,	S. E.	Hazy and clear.
14	29,965	29,950	29,886	29,965	29,925	80,5	92,5	91 0	84 7	84,0	,,	,,	S. E.	Clear.
15	29 915	29 920	29 900	29.388	29,876	81.6	94,5	93,3	85,0	86 0	,,	,,	S. E.	Clear.
16	29 900	29,900	29 905	29,888	29,900	80,2	91,8	90,0	86 6	86,0	,,	,,	S. E.	Clear.
17	29,880	29,885	29,789	29.781	29.820	82,0	95,0	94 8	90,2	88,6	,,	,,	S. E.	Clear and cloudy—distant lightning.
18	29 880	29.905	29,865	29 845	29,841	85,0	98,0	98 5	86,0	85.0	,,	,,	Variable.	Clear and cloudy—lightning.
19	29 900	29,900	29 850	29,880	29,850	83,0	97,2	96.6	86,6	86.2	,,	,,	S. E.	Hazy and cloudy.
20	29,900	29 900	29 880	29,845	29,850	83.4	96,0	92,2	86 0	86,5	,,	,,	Variable.	Hazy—the weather now very hot.
21	29 885	29 900	29 844	29,815	29,810	82,0	91,8	89,2	86,3	85,6	,,	,,	Variable.	Clear.
22	29,855	29 910	29 865	29,884	29.900	81.5	91 5	89.8	87,2	86,0	,,	,,	S. E.	Clear and cloudy.
23	29,900	29,910	29 945	29,880	29 900	84 0	92.8	91 4	86.8	85.5	,,	,,	S. E.	Hazy and clear.
24	29 880	29 900	29 885	29,835	29 880	84,0	94 5	94,2	86,5	86,0	,,	,,	S. E.	Clear and hot.
25	29 845	29.885	29 838	29,880	29.888	84.0	92,2	85,5	84,0	84,5	,,	,,	S. E.	Clear.
26	29 848	29,900	29 880	29.885	29,900	84 0	90,2	91 5	86 6	85,5	,,	,,	S. E.	Clear and hazy.
27	29.900	29.950	29,910	29 900	29,940	83,4	89,8	90 5	86 0	84 0	,,	,,	S. E.	Cloudy and some rain.
28	29,930	29.960	29 955	29,930	29 915	81 5	83,3	82.0	84,0	83,3	0,2	,,	Variable.	Cloudy and some rain.
29	29,900	29 920	29,900	29 855	29 900	82,0	88,8	88,2	84,2	83,5	0,2	,,	E	Hazy—halo of large diam. round the moon.
30	29,885	29 900	29,850	29 820	29,844	80,5	89 8	88 0	85 5	83,5	0,2	,,	S. E.	Clear.
31	29,844	29,875	29,840	29 817	29,825	80,0	88,0	87.2	84 4	84,0	0,1	,,	S. E.	Clear and some rain.

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height....	30,085	98.5
Least Height.......	29,810	79 5
Mean...............	29,9475	89,0
Extreme Difference..	00,275	19,0

Rain
Inches.

Observed....	0 7
Reduced....	0,¼

PHASES OF THE MOON.

	D.	H.	M.	
Full Moon......................	1	0	54	A.
Last Quarter..................	8	9	0	M.
New Moon......................	16	0	21	A.
First Quarter.................	24	6	3	M.
Full Moon......................	30	8	42	A.

In this Month

The Moon had receded to the greatest distance on the 14th.

The nearest approach of the Moon to the Earth was on the 29th.

June 1817.

Days.	Barometer.					Thermometer (*exposed to a free Current of air.*)					Rain Gauge.		Winds.	Weather, &c.
	Sun rise.	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*Sun rise.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*From Sun set to Sun rise.*	*From Sun rise to Sun set.*		
	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	29,830	29,900	29,835	29,783	29,855	80,4	92,5	91,8	86,5	86,0	,,	,,	Fresh S. E.	Hazy.
2	29,860	29,900	29,845	29,850	29,900	83,0	96,0	92,5	86,6	86,2	,,	,,	S. E.	Hazy—lightning.
3	29 910	29,900	29,855	29,855	29,888	83,0	93,0	95,4	86,2	84,0	,,	,,	Variable.	Cloudy—lightning with thunder.
4	29,910	29,940	29,980	29,868	29,855	83.0	98,8	86,7	84,2	84,0	,,	,,	Variable.	Cloudy.
5	29,860	29,915	29,860	29,845	29.900	81,5	92,2	94,0	79,4	83,5	,,	0,2	Land.	Hazy and some rain.
6	29,874	29,900	29,855	29,835	29,860	81,5	92,2	95,5	90,5	86,2	,,	,,	Variable.	Hazy.
7	29,880	29,880	29,834	29,800	29,855	82,6	93,4	94,4	90,0	89,8	,,	,,	Variable.	Hazy and cloudy.
8	29,910	29,925	......	29,878	29,880	84,0	94,8	....	93,0	92,0	,,	,,	Variable.	Cloudy.
9	29,940	30,000	29,950	29,928	29,950	83,0	95,2	97,4	93,0	83,5	,,	0,1	Variable.	Cloudy and some rain.
10	29.940	29,945	29,900	29,900	29,940	80,0	94,2	97,5	85,5	87,0	,,	,,	Land.	Cloudy and hazy.
11	29,944	29,955	29,920	29,865	29,866	83,5	94,8	96,5	85,0	84,4	,,	,,	S. E.	Clear and cloudy alternately.
12	29,928	29,955	29,900	29,885	29.915	83,0	93,0	95,5	86,5	90,5	,,	,,	Land.	Hazy.
13	29,920	29,968	29,928	29.918	29,945	85,0	94,5	97,8	94,0	87,0	,,	,,	Variable.	Hazy and cloudy at times.
14	29,955	29,988	29,914	29,920	29,950	85,2	94,8	97,0	89,0	86,0	0,2	,,	Variable.	Hazy and cloudy.
15	29,978	29,955	29,884	29.900	29,915	84,4	95,5	97,7	87,0	88,0	,,	,,	Variable.	Hazy and cloudy.
16	29.956	29,957	29,900	29,885	29,900	85,0	94,0	96,8	89,0	86,0	,,	,,	Land.	Cloudy and hazy.
17	29,905	29,930	29,868	29,866	29,900	84.5	96,2	95,0	86,0	85,0	,,	,,	S. E.	Clear mostly.
18	29,900	29,938	29,925	29,915	29.940	84,5	94,0	95,6	87,0	87,5	,,	,,	S. E.	Hazy.
19	29,988	29,998	29,955	29,945	29,960	83,5	92.5	89,2	84,5	84,0	,,	,,	S. E.	Hazy and cloudy.
20	29,998	30,005	30.000	29,968	29,955	84,0	89,0	87,8	84,5	83,4	,,	,,	S. E.	Hazy and cloudy with some mist.
21	29,988	30,010	30,006	29.944	30,000	81,5	89,2	88,2	84,5	83,4	,,	,,	Land.	Hazy.
22	29,990	30,000	29 995	29,925	29,945	83,0	88,8	87,8	84,5	83,0	,,	,,	S. E.	Hazy and cloudy.
23	30,000	29.998	29,945	29,930	29.940	81,4	91,4	87,0	83,2	83,0	,,	,,	S. E.	Cloudy and some rain.
24	29,950	29.978	29,940	29,935	29,930	81,8	92,0	93,5	83,0	83,0	,,	0,2	S. E.	Cloudy and some rain—lightning to the S. W.
25	29.998	29 955	29 910	29,880	29,825	79,8	91,5	93,8	87,7	85,0	,,	,,	Land.	Hazy.
26	29,900	29 910	29 888	29,885	29,870	82,0	91,6	93,6	91,0	87,0	,,	,,	Variable.	Hazy—cloudy at times.
27	29.900	29,928	29,900	29,885	29,900	84,0	94,4	95,5	89,0	85,6	,,	,,	Variable.	Hazy and cloudy.
28	29,925	29.925	29,900	29,900	29,945	84,0	94,8	87,0	84,8	90,8	,,	,,	Fresh Land.	Hazy and cloudy.
29	29,950	29,948	29,950	29,900	29,925	83,4	93,4	95,0	86,0	85,0	,,	,,	S. E.	Cloudy and some rain.
30	29,900	29.940	29.900	29,900	29,905	84,0	94.0	93,6	86,5	85,0	,,	,,	S. E.	Hazy.

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height......	30,010	97,8
Least Height........	29,800	79.4
Mean............	29 905	88.6
Extreme Difference...	00,210	18.4

	Rain. Inches.
Observed........	0,7
Reduced........	0,1¾

PHASES OF THE MOON.

	D.	H.	M.	
Last Quarter........	6	10	58	A.
New Moon...........	15	3	6	M.
First Quarter........	22	0	25	A.
Full Moon...........	29	4	39	M.

In this Month

The Moon had receded to the greatest distance on the 10th.
The nearest approach of the Moon to the Earth was on the 26th.

July 1817.

Days.	BAROMETER.					THERMOMETER (*exposed to a free Current of air.*)					RAIN GAUGE.		WINDS.	WEATHER, &c.
	Sun rise.	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*Sun rise.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*From Sun set to Sun rise.*	*From Sun rise to Sunset.*		
	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	29,955	29,970	29,955	29.940	29,999	83,0	94,4	96,0	85,0	85,5	”	”	South Easterly.	Hazy.
2	30,000	30,008	29,940	29,925	29,944	81,5	93,5	95,5	87,5	86,4	”	”	Variable.	Clear and hazy alternately.
3	29,950	29,955	29,960	29,900	29,940	80,5	90,0	92.5	86,6	85,2	”	”	S. E.	Cloudy and hazy.
4	29,900	29,925	29,900	29,885	29,900	83,0	93,7	93,2	86,8	81,2	”	”	Variable.	Hazy and cloudy.
5	29,905	29,900	29,888	29,880	29,878	82,0	93 6	92,6	86,0	85,0	”	”	S. E.	Hazy and cloudy.
6	29,900	29,955	29,950	29,900	29,945	79,0	83,5	89,0	83,0	84,5	4,6	”	Variable.	Cloudy—some rain.
7	29,925	29,923	29,900	29,855	29,880	79,2	90,8	88,2	84,5	85,0	”	”	Variable.	Clear and hazy.
8	29,900	29,850	29,820	29,800	29,850	79,8	90,0	92,0	85.5	84,5	”	”	Variable.	Clear and cloudy with some rain.
9	29,840	29,830	29,858	29,835	29,850	80,0	91,0	90,0	85,2	84,8	0,4	”	Land.	Hazy and cloudy.
10	29,840	29,855	29,850	29.820	29.900	80.6	91,8	92,5	84.5	82,0	”	”	Land.	Hazy and cloudy.
11	29,888	29,900	29,888	29,835	29,855	80,0	90,6	92.5	86,2	85,5	”	”	Variable.	Hazy.
12	29,900	29,950	29,990	29,980	29,888	81,0	91.6	92 0	86,5	85 0	”	”	Land.	Hazy.
13	29,910	29,900	29,832	29,900	29,845	82,0	92,2	96,0	87,2	84 5	”	”	Variable.	Cloudy.
14	29,900	29,938	29,880	29,888	29.900	80,5	90.5	90,4	86,6	84,5	”	0,8	Variable.	Cloudy and some rain.
15	29,940	29,988	29,955	29,915	29,945	80,2	89,8	89.6	84,5	87,0	”	”	Land.	Hazy.
16	29.954	29,950	29,900	29,848	29 888	83.0	92.8	91,5	86,0	85,5	”	”	Land.	Cloudy.
17	29,900	29,925	29.885	29 825	29.850	84,0	91,4	93,3	88,0	88,2	”	”	Land.	Cloudy.
18	29,888	29,888	29,825	29,825	29,875	82,6	90,8	92.6	90,0	89,0	”	”	Variable.	Cloudy and hazy.
19	29,860	29,900	29,920	29 840	29.920	81,2	91,8	92,5	90,2	89,2	”	”	Strong Gale.	Cloudy and mist.
20	29,940	29,948	29,955	29,878	29,900	84 0	95.0	98,0	95.5	94,5	”	”	Strong Land.	Hazy.
21	29,900	29,965	29,905	29.900	29,925	83,0	93.8	97.2	94,0	93,0	”	”	Land.	Hazy.
22	29,940	29,954	29,915	29,900	29,930	85,0	94,4	94,5	93,0	92,2	”	”	Variable.	Hazy and cloudy.
23	29,945	29,968	29,925	29,992	29.955	83.8	93.5	97,0	87,2	84,4	”	”	Land.	Hazy and clear.
24	29,975	30,000	29,968	29,925	29,988	83.0	93,7	94,0	93,0	91,8	”	”	Land.	Hazy and cloudy.
25	29,998	30,000	29,945	29,940	29,950	86.0	91.5	95,2	84,4	85,5	”	”	N. W.	Hazy and cloudy.
26	29,960	29,988	29.900	29 915	29.950	83,0	95.0	96,0	88,0	84,5	”	”	Land.	Cloudy.
27	29,930	29,948	29,955	29,900	29.915	83,0	92,0	93,8	89,5	86,4	0,4	0,2	Land.	Hazy and some rain at night.
28	29,930	29,965	29,925	29,930	29.965	84 0	89,8	92,5	81,8	86,2	”	”	Fresh Land.	Cloudy.
29	29,970	30,000	29,920	29,920	29 940	83,0	91,0	94,0	84,5	82.9	”	”	Variable.	Cloudy.
30	29,924	29,940	29.877	29,857	29.905	82 4	92,2	94,8	81.5	84.0	”	”	Variable.	Cloudy and hazy.
31	29,920	29.950	29,900	29,920	29.925	83.0	92.0	94.5	86,0	81,5	0,4	0.3	Variable.	Cloudy and some rain.

	Barometer.	Thermometer.
	Inches.	Degrees.
Greatest Height.....	30,003	98,0
Least Height.......	29.800	79.0
Mean...............	29,904	88.5
Extreme Difference..	00,208	19,0

	Rain
	Inches.
Observed..........	7,1
Reduced...........	1,7¾

PHASES OF THE MOON.

	D.	H.	M.
Last Quarter....................	6	2	46 A.
New Moon........................	14	3	38 A.
First Quarter...................	21	5	17 A.
Full Moon.......................	28	1	43 A.

In this Month

The Moon had receded to the greatest distance on the 8th.
The nearest approach of the Moon to the Earth was on the 23d.

August 1817.

Days.	BAROMETER.					THERMOMETER (*exposed to a free Current of air.*)					RAIN GAUGE.		WINDS.	WEATHER, &c.
	Sun rise.	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*Sun rise.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*From Sun set to Sun rise.*	*From Sunrise to Sun set.*		
	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	29,950	29,940	29,915	29,988	29.930	84,0	91,0	87,0	83,0	80,5	,,	,,	Land Wind.	Cloudy,—some rain.
2	29,900	29,925	29,888	29,855	29,900	79.0	90,6	84,0	88,8	89,0	0,3	,,	Land.	Hazy and cloudy.
3	29,940	29,925	99,900	29,855	29,900	81,5	93,5	92,0	86,8	85,9	,,	,,	Land.	Hazy.
4	29,940	29,945	29,920	29,900	29,920	80.5	93,0	90,5	35,5	86,0	,,	,,	Variable.	Hazy and clear.
5	29.912	29.940	29,910	29,888	29,920	81,0	94,5	90,5	85,5	85,0	,,	,,	S. E.	Clear and cloudy—misty at night.
6	29,950	29.940	29,905	29.900	29,940	80,0	91,0	94,6	85.5	85,5	,,	,,	Variable.	Cloudy—some rain.
7	29,900	29,935	29,972	29,860	29.900	80,0	90,2	92,7	85,5	85,0	0,4	,,	Variable.	Clear.
8	29,900	29,950	29,905	29,900	29,950	83,0	92,0	89.0	85,5	84,0	,,	,,	S. E.	Clear.
9	29,960	30.000	29,955	29.930	29.970	82,0	91,0	91,6	85,5	84,4	,,	,,	S. E.	Hazy and clear.
10	29 998	30,000	30,005	29,955	29,944	84,0	88,8	88,0	84,5	84,0	,,	,,	S. E.	Clear.
11	29,985	29,960	29,940	29,920	29,950	81,2	90,2	90,0	85,0	84,5	,,	,,	S. E.	Clear.
12	29,950	29,962	29,918	29,910	29.948	80,5	89,8	89,7	85,0	84,5	,,	,,	S. E.	Clear mostly—distant lightning.
13	29,960	29,945	29,958	29,915	29,950	81,0	90,2	91,5	87,2	85,0	,,	,,	S. E.	Clear—distant lightning.
14	29,950	29,968	29.955	29,918	29,950	81,5	90,5	89,8	85,0	88,3	,,	,,	S. E.	Clear.
15	29,930	29,980	29,925	29,920	29,925	80,0	88.8	89.8	80,5	82,0	,,	1,5	S. E.	Clear—cloudy and some rain.
16	29,905	29.940	29,920	29,900	29,990	79,0	90,2	89,0	85,5	84,0	,,	4,5	Calm.	Hazy.
17	29,956	29,965	......	29,940	29,988	79,0	87,0	....	84,4	83,0	,,	,,	Calm.	Clear and hazy.
18	29,945	29,940	29,960	29,900	29.925	79,0	89,5	89,8	85,0	82,5	,,	,,	S. E.	Hazy and cloudy.
19	29,914	29.928	29,910	29,900	29,910	78,0	88,2	83,0	80,0	80.5	,,	1,8	Calm.	Hazy and some rain—halo round the moon.
20	29,940	29,940	29,900	29,920	29,940	78,0	84,0	86,0	84,0	84,5	0,6	,,	Variable.	Cloudy—some rain.
21	29.920	29,944	29,900	29,900	29,888	78,0	85.5	88.0	83,8	83.0	3,0	,,	S. E.	Hazy and cloudy.
22	29,880	29.930	29,920	29,860	29,920	73.8	84,5	86,0	86.0	84,5	,,	,,	Variable.	Cloudy—some rain.
23	29,900	29,915	29,866	29,840	29,845	77,8	86,0	89,0	87,7	84,5	1,4	,,	Variable.	Cloudy and lightning.
24	29,820	29.845	......	29,778	29.788	80,5	88,0	....	86,0	84,5	,,	,,	Land.	Cloudy and lightning.
25	......	29,890	29,818	29,800	29,825	....	87,2	89,8	84,0	80.5	,,	0,4	Land.	Hazy and some rain—lightning.
26	29,885	29,885	......	29,880	29,885	80,0	87.0	....	80,8	80,0	,,	,,	S. E.	Hazy and cloudy.
27	29,886	29.984	29,845	29,825	29,870	80,0	90,7	93,5	85.0	84,2	,,	,,	Variable.	Flying clouds.
28	29.900	29,920	......	29,816	29,850	79,8	91,2	....	86,2	83,0	,,	,,	Variable.	Hazy.
29	29,900	29,986	29,848	29,868	29,866	80,4	88,8	89,8	87,0	84.0	,,	,,	Variable.	Hazy and cloudy.
30	29,900	29.935	29.918	29.900	29.900	79,2	90,0	94,0	90,0	85,5	,,	,,	Variable.	Cloudy and hazy.
31	29,905	29,928	29,900	29,875	29,900	82,2	89,8	90,8	85,0	84,5	,,	,,	Land.	Hazy.

	Barometer.	Thermometer.
	Inches.	Degrees.
Greatest Height.....	30,005	95,5
Least Height.......	29,778	77,8
Mean:............	29,8915	86.65
Extreme Difference..	00,227	17,7

	Rain.
	Inches.
Observed.........	13.9
Reduced.......	3,4¼

PHASES OF THE MOON.

	D.	H.	M.	
Last Quarter................	5	8	12	M.
New Moon..................	13	0	21	A.
First Quarter...............	19	10	11	A.
Full Moon..................	27	0	57	M.

In this Month

The Moon had receded to the greatest distance on the 4th.

The nearest approach of the Moon to the Earth was on the 17th.

September 1817.

Days.	BAROMETER.					THERMOMETER (*exposed to a free Current of air.*)					RAIN GAUGE.		WINDS.	WEATHER, &c.
	Sun rise.	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock*	*Sun rise.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*From Sun set to Sun rise.*	*From Sunrise to Sun set.*		
	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches	inches.		
1	29,905	29,935	29,886	29.855	29,878	81,8	91,2	94,0	94,0	84,6	,,	,,	Land and S. E.	Cloudy—some rain.
2	29.920	29 946	29,844	29,825	29,855	81,4	92,0	94 8	94,8	85,5	,,	,,	Land.	Cloudy—some rain.
3	29.865	29,900	29,845	29,830	29 830	84,0	90.5	93 5	93,5	80,0	,,	2,0	Land and S. E.	Cloudy—some rain.
4	29.855	29,915	29,880	29.880	29,900	80,0	86,0	87,8	87.8	84.0	0,6	,,	Land and calm.	Cloudy—some rain.
5	29,920	29,912	29,855	29 850	29.880	80,2	86,5	88,5	88 5	82,5	0,6	,,	Land.	Hazy and some rain.
6	29,885	29,855	29,788	29,800	29,835	79,2	89,0	92,0	92,0	84,0	,,	,,	Land and S. E.	Mostly clear.
7	29,840	29.855	29.876	29 800	29,865	80,2	92,0	92,5	92,5	82,0	,,	,,	Land and S. E.	Cloudy—some rain.
8	29.885	29,905	29,840	29,855	29,900	79,8	90,5	91,2	91,8	83,0	0,6	,,	Land and S. E.	Cloudy.
9	29.920	29,920	29,900	29.888	29,940	80,5	91,2	88,6	88.6	86,0	,,	,,	Land and S. E.	Cloudy—some rain.
10	29 960	29,988	29,980	29,945	29,950	77,8	88 0	89,0	89,0	83.5	0,2	,,	S. E.	Cloudy.
11	29,980	29 999	29,928	29 900	29,940	78 5	91,5	91,8	91,8	85.5	,,	,,	Land and S. E.	Hazy.
12	29,980	29 940	29.900	29 880	29,940	78,8	92,5	88,5	88,5	84,0	,,	,,	S. E.	Clear.
13	29,960	29,970	29,948	29 905	29,945	80,0	91,0	91,5	91,5	84,5	,,	,,	S. E.	Flying clouds and some rain.
14	29,945	29,960	29 965	29 900	29.940	80,8	90,0	92,0	92 0	83,3	2,0	0,4	Land and S. E.	Hazy and cloudy.
15	29,955	29,940	29 900	29.845	29.900	80,0	88,0	90,0	90,0	84,0	,,	,,	Land.	Hazy.
16	29,905	29,880	29,835	29,850	29,870	80.4	90.0	92,5	92,5	79,5	,,	,,	Land.	Cloudy—some rain.
17	29,855	29,855	29,850	29 830	29,835	79,5	88.5	89.0	89.0	80,0	1,8	,,	Land and S. E.	Cloudy—some rain.
18	29,820	29,910	29.840	29.845	29,850	78 0	83,5	84,5	84,5	82,5	0,4	0,2	Calm.	Cloudy—some rain.
19	29,830	29,833	29,800	29,725	29.740	77,4	77,0	76,2	76,2	78,2	3,4	4,5	Fresh Land.	Cloudy—some rain.
20	29,725	29,800	29 745	29.765	29 810	72.8	83.8	84,5	84,5	81,2	2,5	,,	S. E.	Cloudy—some rain.
21	29,850	29,915	29,862	29 900	29,950	78.0	85,5	88,0	88,0	81,0	,,	,,	S. E.	Cloudy.
22	29,965	30,000	29,999	29 988	30,060	78,0	90,4	87,7	87,7	84,0	,,	,,	S. E.	Cloudy—a most severe thunder storm about half an hour past midnight.
23	30,070	30,075	30,035	30.025	30,070	75,5	88,0	85,5	85,5	81,5	11,5	,,	N. W. and S. E.	Hazy—a halo of considerable diameter round the moon.
24	30,040	30,008	30,035	30,000	30,050	78,0	87,2	86,2	86,2	85,0	,,	,,	Calm.	Hazy—flying clouds.
25	30,045	30,058	30.005	29,968	29,955	78,5	88,0	86,5	86,5	82,5	,,	,,	Calm and S. E.	Clear.
26	30,030	30,040	29,980	30,000	30,040	80,0	89 0	90,4	90,4	81,0	,,	,,	Calm and S. E.	Flying clouds and lightning.
27	30,035	30,075	30,025	30.000	30.040	78,0	87.8	88,4	88,4	83,0	,,	,,	Calm and S. E.	Flying clouds.
28	30,030	30,040	30,015	29,988	30 020	79,2	89,5	86,5	86,5	83,0	,,	,,	Calm and S. E.	Clear—distant lightning.
29	30,000	30,030	29,965	29.965	29,988	79.5	89.0	87,4	87,4	84.5	,,	,,	Calm and S. E.	Cloudy—distant lightning in the evening.
30	30,005	30,015	30 000	29 945	30 010	78,0	89,0	87,2	87,2	84,0	,,	,,	Calm and S. E.	Flying clouds—distant lightning at night

	Barometer. Inches.	Thermometer Degrees.
Greatest Height.....	30,075	94,8
Least Height.......	29,725	72.8
Mean..............	29,900	83,8
Extreme Difference..	00,350	22,0

	Rain. Inches.
Observed.......	30,7
Reduced..	7,7

PHASES OF THE MOON.

	D.	H.	M.	
Last Quarter..................	4	2	23	M.
New Moon.....................	11	0	4	A.
First Quarter.................	18	4	24	M.
Full Moon....................	25	3	8	A.

In this Month

The nearest approach of the Moon to the Earth was on the 13th:
The Moon had receded to the greatest distance on the 29th.

October 1817.

Days.	BAROMETER.					THERMOMETER (exposed to a free Current of air.)					RAIN GAUGE.		WINDS.	WEATHER, &c.
	Sun rise.	Noon.	2 o'clock.	Sun set.	9 o'clock.	Sun rise.	Noon.	2 o'clock.	Sun set.	9 o'clock.	From Sun set to Sun rise.	From Sunrise to Sun set.		
	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	30,000	30,030	30,002	30,000	30,020	80,5	88,2	88,0	84,5	83,5	,,	,,	S. Easterly.	Clear, distant lightning in the evening.
2	30,008	30,015	30,060	30,030	30,050	82,4	88,2	87,4	83,0	82,0	,,	,,	S. E.	Clear.
3	30,100	30,088	30,020	30,010	30,040	82,0	89,0	87,5	84,2	83,0	,,	,,	S. E.	Clear.
4	30 055	30,055	30,000	29 978	30,020	79,8	87,5	87,0	84,0	83,5	,,	,,	S. E.	Clear, lightning in the South West Quarter.
5	30,020	30.030	30,030	30 000	30,020	81,0	88,0	88,2	84.0	83,5	,,	,,	S. E.	Clear.
6	30,028	30,030	30,016	30,000	30,060	81,5	88,4	87,8	84,0	83.0	,,	,,	S. E.	Clear—distant lightning.
7	30,060	30,075	30.058	30.000	30,025	79,8	86,5	83,0	82,0	80,0	,,	,,	S. E.	Cloudy—distant lightning.
8	30,050	30,070	30,000	29 965	29,975	80,0	88,8	88,5	84,4	84,0	,,	,,	S. E.	Clear.
9	30,000	30,010	29,945	29,955	29,960	79,0	89,0	88,0	84,5	83,0	,,	,,	S. E.	Clear—distant lightning.
10	30,030	30,032	29,978	30,000	30,050	80,0	89,0	89,0	85,0	84,8	,,	,,	S. E. and calm.	Clear—distant lightning.
11	30,045	30,076	29,980	30 000	30,020	79,0	87,2	88,0	85,0	84,0	,,	,,	Calm and S. E.	Flying clouds, and some rain.
12	30,020	30,045	30,055	......	......	78,8	88,0	88,4	...	....	,,	,,	Calm and S. E.	Hazy.
13	30,020	30,020	30,000	30,000	30,010	83,0	87,8	87,0	85,5	84,0	,,	,,	S. E.	Cloudy and some rain, with lightning.
14	30,015	30,048	30,000	30,000	30,040	82,0	84,8	85,0	80,0	83,0	4,5	,,	N. E.	Cloudy and rain.
15	30,000	30,080	29,975	29,940	29,970	81,0	80,5	79,2	80,0	79,8	2,0	2,2	N. W.	Cloudy and some rain.
16	29,935	29,960	29 925	29,920	29,950	78,0	81,5	82,0	81,0	81,0	7,2	,,	N. W.	Cloudy.
17	29,920	29,940	29,910	29.900	29,960	79,2	84,8	84,6	82.0	80,5	,,	,,	N. W.	Cloudy and rain.
18	29,945	29,955	29,950	29,920	30,000	78,5	85,0	84,0	83,5	84,0	2,0	,,	S. E.	Cloudy—distant lightning.
19	29,958	30.000	29,946	29,950	30,000	78,8	88,2	88,5	83,5	84,0	,,	,,	S. W. and S. E.	Cloudy—distant lightning in the S. W. and N. W. Quarters.
20	30,005	30,020	30,000	29,960	30,025	79,0	82,8	84,0	82,2	81,5	,,	,,	Calm.	Cloudy; some thunder & lightg. halo round the ☽.
21	30,005	30,040	30,000	30,000	30,050	80,5	86,2	89,0	82,8	84,0	,,	,,	Calm and S. E.	Hazy,—distant lightning in the S. W. Quarter.
22	29,982	30,095	29,965	29 982	30,020	78,0	87,5	87,8	85,2	84,2	,,	,,	S. E and N. E.	Cloudy, halo round the Moon.
23	30,006	30,025	29,965	29,982	30,088	80,0	86,8	87,6	86,0	84,2	,,	,,	N. E.	Hazy.
24	30,050	30,000	29,965	30.020	29,988	82,0	86,8	87,0	82,0	84,0	,,	,,	Calm and N. E.	Hazy, and the dew in the morning commenced.
25	29,900	29,940	29,900	29.905	29,920	79,8	80,5	81,2	80,3	78,0	0,5	4,0	Land and N. E.	Cloudy and rain.
26	29,900	29,910	29,855	29,960	29,965	76,5	77,5	79,0	79,0	79,5	11,8	4.5	N. E.	Cloudy and rain.
27	29,900	29,940	29,900	29.945	29 965	78,0	86,0	84,5	82,0	82,0	2,0	1,4	N. E.	Cloudy and rain.
28	29,920	29,940	29,920	29,900	29,900	77,0	78,0	78,5	78,0	77,0	2,5	4,6	N. E.	Cloudy and rain—distant lightning and thunder.
29	29,900	29,900	29,888	29,855	29,860	78,0	83,0	80,0	78,2	78,0	8,2	3,0	N. E.	Hazy and rain—rainbow, thunder & lightning.
30	29,900	29,935	29,932	29,900	29,910	77,8	83,2	82,5	82,0	81,8	1,6	,,	N. E.	Cloudy and distant lightning at sun-set to the West. Heavy rain the whole night, with vivid lightning and loud thunder.
31	29,954	29,960	29,925	29,920	29,975	79,0	83,5	86,6	82,5	81,5	16,0	,,	S. E.	Clear and hazy.

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height....	30,100	89,0
Least Height.......	29,855	76,5
Mean...............	29,9775	82,75
Extreme Difference.	00,245	12,5

	Rain. Inches.
Observed......	78,0
Reduced	19,5

PHASES OF THE MOON.

	D.	H.	M.
Last Quarter..................	3	8	3 A.
New Moon...	10	9	36 A.
First Quarter..................	17	1	5 A.
Full Moon......................	25	8	16 M.

In this Month

The nearest approach of the Moon to the Earth was on the 11th.
The Moon had receded to the greatest distance on the 26th.

November 1817.

Days.	BAROMETER.					THERMOMETER (*exposed to a free Current of air.*)					RAIN GAUGE.		WINDS.	WEATHER, &c.
	Sun rise.	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*Sun rise.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*From Sun set to Sun rise.*	*From Sunrise to Sun set.*		
	inches.	inches.	inches.	inches	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	30,000	30,028	30,000	29,988	30,020	80,5	85,5	85,6	83,5	82,5	,,	,,	S. Easterly.	Clear and hazy.
2	30,065	30,055	......	30,050	30,065	81,0	86,8	.....	84,0	82,6	,,	,,	S. E.	Clear.
3	30,068	30,058	30,025	30,005	30,050	80,4	88,4	88,5	84,5	85,0	,,	,,	S. E.	Clear—distant lightning.
4	30,000	30,028	29,978	29,955	30,010	79,8	84,4	84,4	82,0	82,0	,,	,,	Calm and N. E	Hazy—lightning in the S. W. Quarter.
5	30,000	30,025	30,000	30,000	30,015	78,0	88,5	87,0	84,5	82,5	,,	,,	S. E. Calm.	Clear.
6	30,040	30,100	30,020	30,040	30,110	79,0	85,2	85,5	84,2	83,0	,,	,,	S. E. and Calm.	Clear—dew at night—distant lightning.
7	30,100	30,114	30,064	30,088	30,130	81,5	86,6	86,5	82,8	82,0	0,8	1,0	N. E.	Flying clouds and some rain at night.
8	30,100	30,145	30,084	30,110	30,130	81,0	85,2	85,0	79,2	81,5	,,	,,	N. E.	Cloudy and rain.
9	30,100	30,120	30,076	30,100	30,110	78,0	86,0	80,8	78,2	78,4	4,6	7,8	N. E.	Cloudy and rain.
10	30,085	30,088	30,015	30,005	30,020	79,0	76,5	77,5	78,2	78,0	1,5	17,5	N. E. and S. E.	Cloudy and rain.
11	30,005	30,010	29,965	29,960	29,988	76,6	78,0	78,5	78,0	78,0	3,5	,,	Fresh N. E.	Mostly cloudy, and rain at night.
12	30,000	30,020	29,998	29,988	30,015	76,5	78,0	81,0	78,0	78,0	5,0	,,	N. E.	Cloudy.
13	30,000	30,025	30 000	29,998	30,000	76,6	76,5	82,5	79,4	78,0	0,5	2,5	N. E.	Cloudy and rain.
14	30,000	30.000	29,980	29,988	29,998	76,0	81,0	82,5	79,0	79,2	3,5	0,8	N. E.	Cloudy and rain.
15	30,000	30,020	30,000	30,000	30,040	80,0	83,5	84,4	81,2	80,5	,,	,,	N. E.	Clear, and some rain at night.
16	29,998	30,020	30,000	30,015	30,045	78,0	84,4	83,0	81,2	79,8	0,5	,,	N. E,	Hazy.
17	30,030	30,050	30,008	30,015	30,020	78,0	83,0	84,0	82,0	80,5	,,	,,	N. E,	Cloudy.
18	30,020	30,040	30,015	30,010	30,040	80,0	84,0	84,5	81,5	82,0	,,	,,	N. E.	Hazy, halo round the Moon about 42d. in diameter.
19	30,008	30,080	30,005	30,000	30,005	78,8	79,0	78,0	77,8	78,5	3,2	4,2	N. E.	Cloudy.
20	30,000	30,015	29,988	29,985	30,000	79,5	83,0	81,2	81,0	81,0	1,5	0,4	N. E.	Cloudy, some rain at night.
21	29,955	30,000	29,955	29,918	29,960	78,8	84,0	84,5	82,5	81,5	1,0	,,	N. E.	Flying clouds.
22	29,955	29,960	29,950	29,910	29,960	81,2	85,0	84,4	83,0	81,5	,,	,,	N. E.	Hazy, and clear alternately.
23	29,915	29,950	29,888	29,884	29,945	81,6	85,0	85,0	83,4	82,5	,,	,,	N. E.	Flying clouds.
24	29,940	30 000	29,965	29 930	29,985	81,0	84,0	83,2	82,0	81,5	,,	1,2	Fresh N. E.	Cloudy and rain.
25	29,960	30,000	29,945	29,915	29.940	81,5	85,0	83,2	81,2	81,2	,,	,,	Fresh N. E.	Cloudy.
26	29,910	29,930	29,875	29,865	29,860	77,5	74,0	74,0	75,5	76,0	,,	3,5	Fresh N. E.	Cloudy, and heavy rain the whole night.
27	29,866	29,900	29,845	29,840	29,850	69,0	71,0	70,6	69,2	66,8	28,4	0,4	Fresh N. E.	Cloudy and heavy rain the whole night.
28	29,915	29,940	29,925	29,915	29,945	71,0	78,8	81,5	78,5	77,0	3,5	,,	Light N. E.	Hazy.
29	29,965	30,015	29,965	29,960	30,010	76,5	79,8	79,8	79,2	79,0	,,	0,5	Calm & light N. E.	Cloudy.
30	30,000	30,015	....	30,000	30,060	71,6	83,5	.....	81,5	79,8	,,	,,	S. E.	Clear.

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height....	30,145	88,5
Least Height.......	29,840	66,8
Mean..............	29,9925	77,65
Extreme Difference..	00,305	21,7

	Rain Inches.
Observed....	97,3
Reduced...	24,325

PHASES OF THE MOON.

	D.	H.	M.
Last Quarter....................	2	0	4 A.
New Moon........................	9	7	29 M.
First Quarter...................	16	1	5 M.
Full Moon.......................	24	3	17 M.

In this Month

The nearest approach of the Moon to the Earth was on the 9th.
The Moon had receded to the greatest distance on the 23d.

December 1817.

Days.	Barometer.					Thermometer (*exposed to a free Current of air.*)					Rain Gauge.		Winds.	Weather, &c.
	Sun rise.	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock*	*Sun rise.*	*Noon.*	*2 o'clock.*	*Sunset.*	*9 o'clock.*	*From Sun set to Sun rise.*	*From Sun rise to Sun set.*		
	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	30,045	30,070	30,025	30,020	30,035	76,0	82,5	83,0	78,5	79,0	”	1,5	S. Easterly.	Cloudy and rain.
2	30,055	30,110	30,065	30,040	30,120	78,0	82,8	83,2	84,0	83,0	”	”	Variable.	Cloudy—distant lightning in the evening.
3	30,100	30,140	30,100	30,100	30,124	79,5	86,0	84,8	82,0	80,2	”	”	S. E.	Clear mostly.
4	30,100	30,125	30,105	30,100	30,120	79,2	78,0	80,2	80,2	80,5	2,0	3,0	N. E.	Cloudy and rain.
5	30,100	30,140	29,984	30,100	30,150	78,0	84,4	83,8	80,0	78,0	0,3	”	N. E.	Cloudy.
6	30,100	30,145	30,100	30,100	30,140	77,0	82,5	82,5	79,2	76 4	”	”	N. E.	Flying clouds.
7	30,100	30,150	……	30,100	30,140	72,5	79,0	….	78,0	78,0	”	”	N. E.	Flying clouds.
8	30,150	30,160	30,115	30,110	30,140	76,0	79,8	81,0	78,5	76,0	”	”	N. E.	Flying clouds.
9	30,118	30,130	30,105	30,110	30,120	75,8	81,8	81,0	78,5	75,5	”	”	N. E.	Cloudy.
10	30,130	30,140	30,110	30,115	30,100	75,5	80,5	81,0	78,0	76,5	”	”	N. E.	Clear.
11	30,100	30,140	30,100	30,110	30,140	75,0	82,5	83,3	79,2	77,7	”	”	N. E.	Clear—dew at night.
12	30,100	30,140	30,100	30,100	30,130	76,5	84,0	83,6	80,5	78,0	”	”	N. E.	Clear—dew.
13	30,100	30,100	30,060	30,055	30,110	76,2	82,0	82,0	79,5	79,0	”	”	N. E.	Hazy.
14	30,055	30,102	……	30,055	30,100	76,6	83,2	….	79,0	78,0	”	”	N. E.	Cloudy—some rain.
15	30,110	30,120	30,060	30,065	30,100	75,5	77,0	78,2	78,6	78,2	0,8	2,0	N. E.	Cloudy—rain.
16	30,080	30,120	30,060	30,065	30,120	77,7	77,0	78,5	75,5	76,5	1,8	3,5	Variable.	Cloudy and rain with lightning and thunder.
17	30,110	30,125	30,075	30,088	30,120	77,0	82,5	82,5	79,5	78,8	”	”	N. E.	Hazy—halo round the Moon.
18	30,100	30,135	30,075	30,060	30,110	78,5	83,3	84,5	79,5	78,4	”	”	N. E.	Flying clouds.
19	30,100	30,125	30,075	30,088	30,140	79,5	84,4	83,7	78,8	79,4	”	”	N. E.	Mostly clear.
20	30,120	30,185	30,140	30,125	30,165	78,5	83,4	83,0	79,0	78,2	”	”	Fresh N. E.	Flying clouds.
21	30,140	30,145	30,084	30,110	30,130	78,0	83,8	84,4	80,2	78,0	”	”	N. E.	Hazy.
22	30,100	30,110	30,055	30,040	30,100	75,5	81,5	80,0	79,0	78,8	”	0,8	N. E.	Cloudy—some rain.
23	30,060	30,100	30,040	30,034	30,080	74,0	77,5	80,2	78,0	77,7	2,0	0,5	S. E.	Cloudy—some rain.
24	30,055	30,100	30,065	30,045	30,110	77,0	80,2	82,0	79,8	77,0	1,4	0,2	S. E.	Cloudy—some rain.
25	30,100	30,110	30,065	30,050	30,105	78,0	82,4	77,6	77,0	78,0	3,5	0,2	E.	Hazy.
26	30,100	30,145	30,084	30,080	30,130	78,0	82,2	82,4	79,4	78,0	”	1,5	N. E.	Hazy—some rain.
27	30,135	30,140	30,100	30,110	30,140	79,8	84,8	83,5	81,0	78,5	”	”	Variable.	Flying clouds.
28	30,130	30,165	30,144	30,135	30,145	77,0	83 3	84,0	79,0	77,8	”	”	N. E.	Clear.
29	30,165	30,200	30,146	30,130	30,198	77,0	83,8	84,4	80,0	79,8	”	”	N. E.	Hazy—dew at night.
30	30,150	30,160	30,145	30,140	30,160	76,0	83,3	82,5	80,5	77,8	”	”	N. E.	Clear and dew.
31	30,200	30,205	30,125	30,120	30,165	76,0	84,5	85,2	80,5	77,0	”	”	N. E.	Clear and dew.

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height …	30,205	86.0
Least Height……	30,020	72,5
Mean……	30,1125	79,25
Extreme Difference.	00,185	13,5

	Rain Inches.
Observed….	25,0
Reduced….	6,25

PHASES OF THE MOON.

	D.	H.	M.	
Last Quarter………	2	1	42	M.
New Moon………	8	5	54	A.
First Quarter………	15	4	50	A.
Full Moon………	23	10	20	A.
Last Quarter………	31	0	54	A.

In this Month

The nearest approach of the Moon to the Earth was on the 7th:
The Moon had receded to the greatest distance on the 20th.

TABLE of the MEAN, GREATEST, and LEAST Heights; with the EXTREME DIFFERENCES, of the BAROMETER, and THERMOMETER-exposed; together with the FALL of RAIN at the MADRAS OBSERVATORY in the year 1817.

MONTHS.	BAROMETER.				THERMOMETER (exposed to a free Current of air.)				RAIN GAUGE.	
	Mean.	Greatest.	Least.	Extreme difference.	Mean.	Greatest.	Least.	Extreme difference.	Observed.	Reduced.
	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	inches.	inches.
January	30,175	30,250	30,100	00,150	75,9	83,8	68,0	15,8	01,4	0,35
February	30,133	30,300	29,966	00,334	77,5	87,5	67,5	20,0	,,	,,
March	30,053	30,166	29,940	00,226	80,0	90,0	70,0	20,0	,,	,,
April	30,027	30,140	29,915	00,225	82,7	92,0	73,5	18,5	,,	,,
May	29,947	30,085	29,810	00,275	89,0	98,5	79,5	19,0	00,7	0,175
June	29,905	30,010	29,800	00,210	88,6	97,8	79,4	18,4	00,7	0,175
July	29,904	30,008	29,800	00,208	88,5	98,0	79,0	19,0	07,1	1,775
August	29,8915	30,005	29,778	00,227	86,65	95,5	77,8	17,7	13,9	3,475
September	29,900	30,075	29,725	00 350	83,8	94,8	72,8	22,0	30,7	7,7
October	29,9775	30,100	29,855	00,245	82,75	89,0	76,5	12,5	78,0	19,5
November	29,9925	30,145	29,840	00,305	77,65	88,5	66,8	21,7	97,3	24,325
December	30,1125	30,205	30,020	00,185	79,25	86,0	72,5	13,5	25,0	6,225

	BAROMETER.	THERMOMETER EXPOSED.	RAIN GAUGE.	
			Observed.	Reduced.
	inches.	degrees.	inches.	inches.
General Mean	30,001	82,7	254,8	63,7
Greatest Height	30,300	98,5		
Least Height	29,725	66,8		
Extreme Difference	00,575	31,7		

During this year

The Moon was nearest to the Earth on the 30th of April and 9th of November.

The Moon was at the greatest distance from the Earth on the 16th of April and the 23d of November.

METEOROLOGICAL TABLES.

PART IV.

METEOROLOGICAL JOURNAL

KEPT IN THE

MADRAS OBSERVATORY

IN THE YEAR 1818.

January 1818.

Days.	BAROMETER.					THERMOMETER (*exposed to a free Current of air*)					RAIN GAUGE.		WINDS.	WEATHER, &c.
	Sun rise.	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*Sun rise.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*From Sun set to Sun rise.*	*From Sunrise to Sun set.*		
	inches.	inches.	inches	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	30,160	30,160	30,130	30,130	30,145	77,5	84,2	82,0	81,0	78.4	,,	,,	N. Easterly.	Clear—dew in the night.
2	30,160	30,200	30,140	30,145	30,200	77.5	84,8	83,8	81,2	78,8	,,	,,	N. E.	Clear—dew.
3	30,160	30,210	30,155	30,180	30,200	79,0	83,4	83,0	80,5	80,0	,,	,,	N. E.	Hazy—dew.
4	30,200	30.230	30,175	30,160	30,230	78.5	83,5	84,8	79,0	78.0	,,	,,	N. E.	Hazy.
5	30,200	30,240	30,140	30,140	30,200	77,0	83,0	82,0	79,2	79,8	,,	,,	N. E.	Mostly clear.
6	30,170	30,200	30,138	30,140	30,170	76,5	80,4	81,6	77,2	78,0	,,	,,	N. E.	Cloudy.
7	30,180	30,170	30,185	30,130	30,140	75,0	81,0	80,5	78,8	77,0	,,	,,	N. E.	Cloudy.
8	30,155	30,160	30,135	30,120	30,120	76,0	82,5	83,0	79,4	77,4	,,	,,	N. E.	Hazy—dew at night.
9	30,100	30,130	30,110	30,120	30,170	74,8	83,0	83,0	78,8	78,0	,,	,,	N. E.	Flying clouds.
10	30,150	30,160	30,170	30,145	30,160	71,5	83,3	83,0	79.8	78,0	,,	,,	N. E.	Clear—dew on the ground in the morning.
11	30,200	30,185	......	30,180	30,140	75,5	84,8	....	78,0	75,8	,,	,,	N. E.	Hazy—clear—dew.
12	30,165	30,140	30,100	30,120	30,140	76,0	80,0	84,0	78,5	77,3	,,	,,	N. E.	Mostly clear.
13	30,120	30,200	30,135	30,155	30,200	76,5	83 8	82.5	79.0	76,0	,,	,,	N. E.	Hazy.
14	30,155	30,175	30,145	30,142	30,150	76,8	82 5	82,5	79,2	78,0	,,	,,	N. E.	Clear.
15	30,125	30,170	30,130	30,125	30,140	74,2	84 0	82,5	80,8	78,0	,,	,,	N. E.	Clear—dew at night.
16	30,110	30,125	30,185	30,055	30 080	75,0	83,5	83,6	79,8	78,0	,,	,,	N. E.	Mostly clear—dew.
17	30,055	30,100	30,130	30,035	30,070	69,0	84,0	84,4	79,4	76,5	,,	,,	N. E.	Clear—hazy—dew.
18	30,060	30,120	30,084	30,085	30,105	75,0	83 6	83,4	79,7	78.0	,,	,,	N. E.	Mostly clear—dew.
19	30,100	30,130	30,200	30,085	30,120	73,0	83,5	82,5	80 4	78,0	,,	,,	N. E.	Mostly clear—dew.
20	30,100	30,110	30,065	30,000	30,105	77,0	80,8	81,5	80,0	79,8	,,	,,	N. E.	Mostly hazy and some rain.
21	30,088	30,088	30,035	30,055	30,060	78,0	84 5	84.0	82,8	76,5	,,	,,	N. E.	Mostly clear—dew.
22	30,060	30,100	30,080	30,050	30,088	75,0	83,5	83,0	79,2	79,6	,,	,,	N. E.	Mostly clear—dew.
23	30,100	30,120	30,060	30,070	30,118	76,0	83,8	84,0	79,0	77,4	,,	,,	N. E.	Clear, and a heavy dew in the night.
24	30,070	30,130	30,130	30,100	30,150	75,0	80,8	80,8	79,2	77,0	,,	,,	N. E.	Mostly hazy—dew.
25	30,100	30,165	30,125	30,100	30,160	74,5	85,5	85,2	80,2	79,3	,,	,,	N. E.	Clear.
26	30,180	30,200	30,150	30,150	30,100	78,0	85 8	85,5	81,5	79,8	,,	,,	N. E.	Mostly clear and dew at night.
27	30,150	30,200	30,135	30,150	30,180	75,0	83,5	85,6	80,5	78,0	,,	,,	N. E.	Mostly clear.
28	30,155	30,200	30,150	30,125	30,130	76,0	82.5	83,5	80,0	78,6	,,	,,	N. E.	Mostly clear—dew.
29	30,125	30,160	......	30,115	30,180	74,8	84,0	....	80,0	77,8	,,	,,	N. E.	Clear—dew.
30	30,110	30,150	30,120	30,100	30,106	75,0	85,5	83,2	80.0	80,0	,,	,,	Calm and N. E.	Clear—dew.
31	30,100	30,125	30,066	30,070	30,100	74,5	86,4	84,8	80,5	80,0	,,	,,	N. E.	Clear—dew.

	Barometer.	Thermometer.
	Inches.	Degrees.
Greatest Height......	30,240	86,4
Least Height.......	30,000	69,0
Mean...............	30,120	77.70
Extreme Difference..	00,240	17,4

PHASES OF THE MOON.

	D.	H.	M.	
New Moon................	7	4	57	M.
First Quarter..............	14	0	5	A.
Full Moon...............	22	3	47	A.
Last Quarter...............	29	10	3	A.

In this Month

The nearest approach of the Moon to the Earth was on the 5th.
The Moon had receded to the greatest distance on the 17th.

February 1818.

Days.	BAROMETER.					THERMOMETER (*exposed to a free Current of air.*)					RAIN GAUGE.		WINDS.	WEATHER, &c.
	Sun rise.	*Noon.*	2 *o'clock.*	*Sun set.*	9 *o'clock.*	*Sun rise.*	*Noon.*	2 *o'clock.*	*Sun set.*	9 *o'clock.*	*From Sun set to Sun rise.*	*From Sunrise to Sun set.*		
	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	30,100	30,120	30,100	30,080	30,115	78,0	86,2	84,4	80,6	80,0	,,	,,	N. Easterly.	Clear—dews at night.
2	30,135	30,155	30,100	30,125	30,120	79,0	86,5	86,5	82,5	79,2	,,	,,	N. E.	Clear—dew.
3	30,145	30,160	30,120	30,120	30,140	78,0	84,0	83,5	80.6	80,2	,,	,,	N. E.	Mostly hazy.
4	30,146	30,115	30,140	30,145	30,170	78,0	83,5	82,5	80,5	78,0	,,	,,	N. E.	Mostly clear—dew.
5	30.135	30,200	30,138	30,145	30,140	75,0	84,5	83,4	80,0	78,8	,,	,,	N. E.	Mostly hazy—dew.
6	30,135	30,160	30,150	30,125	30,150	76,0	85,0	83,5	80,4	78,0	,,	,,	N. E.	Mostly clear—dew.
7	30,115	30,140	30,100	30,100	30,165	74,5	85,0	84,5	80,4	76,0	,,	,,	N. E.	Clear—dew.
8	30,125	30,150	30,150	30,110	30,130	73,2	83,2	83,0	80,2	79,2	,,	,,	N. E.	Mostly clear—heavy dew.
9	30,140	30,105	......	30,140	30,155	71,2	85,5	.....	81,2	80,0	,,	,,	N. E.	Clear—dew at night.
10	30,135	30,177	30,134	30,110	30,165	71,0	84,5	84,4	80,2	78,0	,,	,,	Calm.	Clear—dew.
11	30,140	30,200	30,155	30,120	30,125	70,0	84,5	84,6	80,0	79,5	,,	,,	S. E.	Clear—heavy dew on the ground in the morning.
12	30,150	30,170	30,144	30,135	30,140	71,5	83,2	84,4	80,2	77,8	,,	,,	S. E.	Mostly clear—dew.
13	30.165	30,155	30,110	30,100	30,125	70,6	82,6	84.0	79,2	75,5	,,	,,	S. E.	Clear—dew at night.
14	30,100	30,145	30,110	30,115	30,110	71,0	83,0	83,0	78 0	74,5	,,	,,	S. E.	Clear—dew.
15	30,120	30,140	30,110	30,110	30,150	69.0	83,5	84,5	79,5	78,0	,,	,,	S. E.	Clear—dew.
16	30,150	30,170	30,120	30,140	30,130	73,0	83,4	84,8	80,0	79.0	,,	,,	S. E.	Mostly clear—dew.
17	30,100	30,120	30,178	30,055	30,075	73,6	84,4	85,4	81,2	78,5	,,	,,	S. E.	Clear—heavy dew at night.
18	30,085	30,055	30,040	30,110	30,015	70,0	84,5	85,2	79,5	76,8	,,	,,	S. E.	Clear—heavy dew at night still.
19	30,055	30,045	30,005	30,000	30,005	69,5	90,5	91,0	80,5	78,8	,,	,,	S. E.	Clear—dew.
20	30,000	30,028	30,000	30,000	30,040	70,0	87,4	86,0	80,0	77,8	,,	,,	S. E.	Clear—dew at night.
21	30 045	30,055	30,015	30,000	30,040	68,7	83,5	84,0	78,0	77,8	,,	,,	S. E.	Clear—dew.
22	30,055	30,058	30,045	30,040	30,050	71,8	84,0	85,5	79,0	79,0	,,	,,	S. E.	Clear—dew.
23	30,100	30,065	30,100	30,068	30,100	70,6	85,2	85,2	79,0	77,5	,,	,,	S. E.	Clear—dew.
24	30,110	30,125	30,055	30,050	30,050	71,0	84,0	84,0	78.5	76,5	,,	,,	S. E.	Clear.
25	30.000	30,088	30,040	30,045	30,070	72,0	83,0	82,5	79,4	77,0	,,	,,	S. E.	Clear—heavy dew at night.
26	30.025	30,053	30,020	30,000	30,005	72,5	85,5	85,0	80,5	80,0	,,	,,	S. E.	Clear—dew.
27	30,000	30,088	30,055	30,040	30,070	76,0	85,5	85,0	80,4	79,0	,,	,,	Fresh S. E.	Clear—dew.
28	30,044	30,080	30,024	30,014	30,040	72,5	86,0	85,5	82,2	81,2	,,	,,	S. E.	Clear.

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height.....	30,200	91,0
Least Height........	30,000	68,7
Mean:...............	30,100	79,85
Extreme Difference..	00,200	22,3

PHASES OF THE MOON.

	D.	H	M.	
New Moon................	5	4	59	A.
First Quarter...............13	13	9	23	M.
Full Moon..................21	21	6	50	M.
Last Quarter................28	28	5	48	M.

In this Month

The nearest approach of the Moon to the Earth was on the 1st.
The Moon had receded to the greatest distance on the 13th.

March 1818.

Days.	BAROMETER.					THERMOMETER (*exposed to a free Current of air.*)					RAIN GAUGE.		WINDS.	WEATHER, &c.
	Sun rise.	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*Sun rise.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*From Sun set to Sun rise.*	*From Sun rise to Sun set.*		
	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	30,030	30.045	30,028	30,000	30,044	77,5	86,8	87,4	82,5	82,0	"	"	South Easterly.	Clear and still some dew.
2	30,030	30,085	30,025	30,000	30,040	77.5	86.5	86,0	82,5	82,0	"	"	S. E.	Mostly clear.
3	30,045	30,068	30,035	30,025	30,046	78,5	85,6	85,0	81,3	81,0	"	"	S. E.	Mostly hazy.
4	30,035	30,075	30,050	30,042	30,045	78,8	90,2	88,5	82,0	81,6	"	"	S. E.	Clear—the heat much increased.
5	30,000	30,020	30,025	30,000	30,020	80,0	86 2	86,0	81,2	81,0	"	"	S. E.	Clear.
6	30,000	30,055	29,984	30,000	30,025	79,8	86,6	86,4	82,6	81,8	"	"	N. E.	Mostly hazy.
7	30.015	30,055	30,045	30,025	30,060	80,0	85,5	85,0	82,5	81,6	"	"	E.	Hazy.
8	30,000	30,055	30,025	30,045	30,040	79,8	87,2	86,2	80,0	80,5	"	"	E.	Hazy and clear alternately.
9	30,058	30,120	30,062	30,065	30,065	81,0	86,2	85,0	81,4	81,0	"	"	N. E.	Clear.
10	30,065	30,105	30,070	30.050	30,100	77,0	86,3	85 6	82,6	81,2	"	"	N. E.	Mostly clear—the dew recommencing.
11	30,065	30,100	30,064	30,044	30,045	73,3	87,0	86,7	79,8	77,0	"	"	N. E.	Clear—dew.
12	30,040	30,100	30.048	30,022	30.045	69,2	87,2	88,0	79,4	74,5	"	"	S. E.	Clear—dew at night.
13	30,020	30.045	30,050	30,015	30,040	68,2	85,5	86,2	79,3	75 5	"	"	S. E.	Clear—dew.
14	30,000	30,030	30,018	30,100	30,020	70,0	87,0	86,5	80,0	79,2	"	"	Fresh S. E.	Clear—dew in the night.
15	30,015	30,055	......	30 005	30,045	71,0	86,4	....	79,2	78,0	"	"	S. E.	Clear—dew.
16	30,040	30,055	30,024	30 040	30,055	71,0	88,2	88,0	80,0	79,0	"	"	S. E.	Clear—dew.
17	30,045	30,075	30,068	30,045	30,070	71,5	86,2	86,0	80,2	79,2	"	"	S. E.	Clear.
18	30,088	30,065	30,025	30 014	30,040	69,5	86,0	86,0	81,5	80,0	"	"	S. E.	Clear—dew.
19	30,020	30,040	30,005	30,000	30,005	73,0	86,2	86,0	81,2	80,0	"	"	S. E.	Clear.
20	30,000	30,055	30,025	30,000	30,005	74,5	87,0	87,0	82.4	80,2	"	"	S. E.	Mostly clear—dew.
21	30,045	30,055	30,025	30,010	30,014	75,0	86,2	86,0	82,0	81,5	"	"	Fresh S. E.	Clear—some dew at night.
22	30,055	30,012	30,076	30,028	30,015	77,0	87,2	86 6	82,2	81,6	"	"	S. E.	Mostly clear.
23	30,045	30,140	30,125	30,100	30,140	76,6	86,8	87,0	82,0	80,4	"	"	S. E.	Mostly clear—the heat of the sun powerful.
24	30,120	30,145	30,100	30.110	30,130	78,0	86,8	86,0	82,2	80,5	"	"	S. E.	Clear—the dew at night continuing.
25	30,100	30,110	30,125	30.075	30,115	74,5	87,0	87,2	82,2	82,0	"	"	S. E.	Clear—dew at night.
26	30,100	30,125	30,105	30,055	30.070	74,0	88,0	87,7	82,0	80,0	"	"	S. E.	Clear—dew.
27	30,100	30,100	30,055	30,070	30,080	72,0	87,7	86,2	82,5	82,0	"	"	S. E.	Clear.
28	30,075	30 065	30,035	30,015	30,030	73.0	88,8	87,7	83,0	82,5	"	"	South or L. S. W.	Clear—the dew appears to have discontinued.
29	30,040	30.055	30,000	30,005	30,020	73,0	91,2	89,0	84,2	84,0	"	"	South or L. S. W.	Clear.
30	30,025	30,020	29.968	29,977	30,000	78,5	90,2	88,0	83,0	83,0	"	"	South or L. S. W.	Clear.
31	30,040	30,050	30,025	30,020	30,100	77,0	88,7	87,7	82,7	82,0	"	"	South or L. S. W.	Clear.

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height....	30,145	91,2
Least Height......	29 968	68,2
Mean.............	30,0565	79,7
Extreme Difference..	00,177	23,0

PHASES OF THE MOON.

	D.	H.	M.	
New Moon....................	7	6	20	M.
First Quarter..............	15	6	29	M.
Full Moon..................	22	7	22	A.
Last Quarter...............	29	0	58	A.

In this Month

The Moon had receded to the greatest distance on the 13th.
The nearest approach of the Moon to the Earth was on the 25th.

April 1818.

Days.	Barometer.					Thermometer (*exposed to a free Current of air.*)					Rain Gauge.		Winds.	Weather, &c.
	Sun rise.	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*Sun rise.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*From Sun set to Sun rise.*	*From Sunrise to Sun set.*		
	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	30,045	30,120	30,075	30,100	30,120	76,5	86,5	86,0	83,0	81,5	”	”	South Easterly.	Clear.
2	30,100	30,150	30,165	30,088	30,140	76,7	87,8	87,0	83,0	81,5	”	”	S. E.	Clear.
3	30,100	30,130	30,080	30,075	30,100	76,0	87,0	88,0	84,2	82,5	”	”	Calm and N. E.	Mostly clear.
4	30,078	30,110	30,075	30,035	30,070	78,0	86,2	86,4	82,4	82,5	”	”	Variable & S. E.	Clear—and a light dew during the night.
5	30,100	30,050	……	30,000	30,005	78,7	88,0	….	84,0	83,5	”	”	S. E.	Day clear—lightning and hazy all night.
6	30,040	30,070	30,055	30,015	30,045	79,0	89,0	88,5	84,4	83,5	”	”	S. E.	Clear.
7	30,040	30,100	30,044	30,040	30,100	80,5	84,2	87,4	83,0	81,5	”	”	S. E.	Mostly cloudy.
8	30,105	30,110	30,100	30,040	30,088	80,0	89,0	88,8	84,2	80,8	”	”	S. E.	Hazy.
9	30,100	30,100	30,055	30,040	30,100	80,0	89,0	88,0	84,0	84,5	”	”	N. E. & S. E.	Flying clouds—distant lightning to the N. W.
10	30,025	30,100	30,035	30,020	30,015	80,5	90,0	88,6	84,5	84,0	”	”	S. E.	Clear.
11	30,050	30,060	……	29,988	30,000	81,0	88,8	….	85,0	84,5	”	”	S. E.	Clear—lightning at midnight.
12	30,005	30,025	……	29,948	29,945	80,2	89,4	….	84,5	84,0	”	”	S. E.	Clear—distant lightning in the N. E. Quarter.
13	30,000	30,050	30,000	29,965	30,000	80,5	83,0	88,0	83,5	83,0	”	”	S. E.	Clear & cloudy with some rain thunder & lightning.
14	30,005	30,045	30,026	30,005	30,045	80,2	89,5	88,2	80,5	83,0	”	2,4	Variable.	Cloudy and some rain.
15	30,000	30,015	30,000	29,944	29,970	80,5	91,4	90,0	85,2	84,5	”	”	S. E.	Clear.
16	30,000	30,005	29,955	29,928	29,980	80,5	90,5	90,0	85,0	84,0	”	”	S. E.	Flying clouds.
17	29,945	30,045	30,000	29,945	29,980	80,8	91,5	90,0	85,0	84,5	”	”	S. E.	Clear.
18	30,045	30,050	29,982	30,000	30,005	82,4	90,0	88,8	85,0	84,8	”	”	S. E.	Clear.
19	30,080	30,045	30,056	29,955	30,000	81,5	91,0	90,0	84,0	84,0	”	”	S. E.	Clear.
20	29,988	30,000	30,005	29,935	29,940	81,5	91,5	91,0	84,0	84,5	”	”	Fresh S. E.	Clear.
21	29,945	30,005	29,965	29,945	29,950	80,8	90,0	89,2	84,2	84,3	”	”	Fresh S. E.	Mostly clear.
22	……	30,016	29,988	29,940	29,944	….	89,2	89,4	84,2	83,6	”	”	Fresh S. E.	Clear
23	30,010	30,025	30,000	30,005	30,000	80,0	89,8	90,0	84,0	84,5	”	”	Fresh S. E.	Clear.
24	29.988	30,025	29,988	29,958	30,015	80,5	88,2	88,5	83,8	83,0	”	”	S. E.	Hazy.
25	30,005	30,044	30,000	29,988	30,000	79,8	90,2	90,0	84·5	83,5	”	”	Fresh S. E.	Clear.
26	……	30,025	……	30,000	29,988	….	88,2	….	85,0	84,5	”	”	S. E.	Clear.
27	29,985	30,000	29,978	29,965	29,975	80,5	88,2	89,5	85,2	84,0	”	”	S. E.	Clear.
28	30,000	30,015	29,966	29,938	30,000	80,4	91,5	89,8	85,0	84,5	”	”	Fresh S. E.	Clear.
29	30,005	30,015	30,000	29,935	29,940	81,0	90,0	89,5	84,5	84,5	”	”	S. E.	Clear.
30	30,000	30,025	29 988	29.948	29.980	80,4	90,8	90,7	84,5	84,6	”	”	Fresh S. E.	Clear.

	Barometer. Inches.	Thermometer Degrees.
Greatest Height……	30,165	91,5
Least Height……	29,928	76,5
Mean……	30,0465	84,0
Extreme Difference..	00,237	15,0

	Rain. Inches.
Observed……	2,4
Reduced.. ……	0,6

PHASES OF THE MOON.

	D.	H.	M.	
New Moon……	5	9	5	A.
First Quarter……	14	1	12	M.
Full Moon……	21	5	34	M.
Last Quarter……	27	8	25	A.

In this Month

The Moon had receded to the greatest distance on the 10th.

The nearest approach of the Moon to the Earth was on the 22d.

May 1818.

Days.	BAROMETER.					THERMOMETER (*exposed to a free Current of air.*)					RAIN GAUGE.		WINDS.	WEATHER, &c.
	Sun rise.	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*Sun rise.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*From Sun set to Sun rise.*	*From Sun rise to Sunset.*		
	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	29,965	30,040	30,000	29,985	29.938	80,5	89,2	89,0	84.5	83,8	”	”	Fresh S. E.	Clear.
2	30,000	30,028	29,968	29,985	30,000	81,0	88,2	87,2	84,5	83,5	”	”	S. E.	Clear.
3	30,000	29,988	29,984	29,955	30,000	80,0	89,8	89,0	84,5	84,0	”	”	Fresh E.	Clear.
4	30,020	30,008	......	29,965	29,986	80,5	89,8	....	85,0	84,0	”	”	S. E.	Clear.
5	30,000	30,035	......	29,948	29,980	80,0	88,0	....	84,2	84,0	”	”	S. E.	Clear.
6	29,985	29,975	29,960	29 968	29,915	80,8	91,5	90,5	85,0	84,6	”	”	S. E.	Clear and cloudy alternately.
7	29,945	29,988	......	29,858	29,845	80,0	91,2	....	85,0	84.5	”	”	S. E.	Mostly clear.
8	29,900	29,925	29.900	29,855	29,880	80,5	92,2	92,0	84,5	85,0	”	”	S. E.	Mostly clear.
9	29,900	29,945	29,900	29,885	29,900	83,5	90,8	90,0	85,0	85,0	”	”	S. E.	Mostly clear.
10	29,940	29,955	......	29,880	29,885	84,0	91,2	....	86,4	86,0	”	”	Calm.	Mostly clear.
11	......	29,925	29,852	29,900	29,880	....	91,2	91,4	85,5	80,0	”	”	S. E.	Hazy.
12	29.835	29,885	......	29,800	29,805	81,0	93,0	....	88,0	88,5	”	”	Calm and S. E.	Mostly clear—halo of very large diameter round the moon.
13	29,800	29,855	29,820	29,788	29.785	84,0	96,6	96,0	84,8	84.0	”	”	Land and S. E.	Clear and cloudy.
14	29,800	29,788	29,838	29.755	29,800	84,4	97,6	93.6	85,0	84,6	”	”	S. E.	Clear.
15	29.788	29,988	29,842	29,788	29,780	84,4	92,8	93,4	87,0	88,0	”	”	Land and S. E.	Clear.
16	29,900	29.988	29,895	29,900	29,905	87,0	91,8	90,4	85,5	86,0	”	”	S. E.	Hazy and clear.
17	29,940	29,945	29,950	29,900	29,920	86,5	91,5	92,0	85,0	85,0	”	”	S. E.	Clear.
18	29.925	29,900	29,846	29,800	29.820	85,5	92,5	92,8	86,0	86,2	”	”	Fresh S. E.	Clear.
19	29,768	29,880	29,844	29 848	29,900	84,5	95,0	94,0	87,0	87,0	”	”	Fresh S. E.	Clear.
20	29,855	29,915	29.900	29,844	29,877	85,0	95,6	96,0	87,2	87,0	”	”	S. E.	Clear.
21	29.868	29.860	29,817	29,815	29.840	84,4	100,2	102,5	90,5	88,2	”	”	Land and S. E.	Clear—the heat unusually great in the day.
22	29,878	29,900	29,885	29,848	29,888	88,0	98,5	100,5	95,5	89.5	”	”	Strong Land W.	Mostly hazy.
23	29.855	29.868	29,885	29 855	29.915	86.0	100,0	98,8	89,5	88,0	”	”	Land Wind.	Hazy.
24	29,865	29,960	29,966	29,844	29,877	88,6	97,5	96,5	88 5	87,5	”	”	S. E.	Clear.
25	29,838	29,835	29,828	29,818	29,815	84,0	99,5	103.8	88,5	87,2	”	”	S. E.	Clear.
26	29,805	29,848	29,818	29,815	29,826	83.5	97,5	96,0	87,2	87,0	”	”	S. E.	Clear.
27	29,820	29,866	29.815	29,825	29.844	84,5	93,5	92,5	86,2	85,4	”	”	S. E.	Clear.
28	29,818	29,900	29,900	29,815	29,880	83,4	98,2	98,2	85,5	85,5	”	”	S. E.	Clear.
29	29.845	29,885	29,848	29,828	29,955	85,0	96.2	96,0	88,4	88.0	”	”	Land.	Cloudy.
30	29,946	29,980	29.888	29.825	29,855	85,0	98,8	96,5	87,2	86,3	”	”	Land.	Mostly clear.
31	29.854	29,858	29,844	29 835	29,836	85,5	98,3	94.4	88,0	87.5	”	”	Land.	Clear.

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height.....	30,040	103.8
Least Height.......	29,755	80,0
Mean..............	29,8975	91,90
Extreme Difference...	00,285	23,8

PHASES OF THE MOON.

	D.	H.	M.	
New Moon..........	5	0	47	A.
First Quarter........	13	4	29	A.
Full Moon..........	20	1	50	A.
Last Quarter........	27	5	10	M.

In this Month

The Moon had receded to the greatest distance on the 7th.

The nearest approach of the Moon to the Earth was on the 20th.

June 1818.

Days.	BAROMETER.					THERMOMETER (exposed to a free Current of air.)					RAIN GAUGE.		WINDS.	WEATHER, &c.
	Sun rise.	Noon.	2 o'clock.	Sun set.	9 o'clock.	Sun rise.	Noon.	2 o'clock.	Sun set.	9 o'clock.	From Sun set to Sun rise.	From Sunrise to Sun set.		
	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	29,900	29,888	29,855	29,818	29,850	82,5	97,2	100,5	87,2	87,0	”	”	Land.	Mostly hazy.
2	29.837	29,888	29.814	29,810	29,825	86 4	98,5	99.0	88,0	87,2	”	”	Land and S. E.	Mostly hazy—lightning in the S. W. Quarter.
3	29.810	29,875	29 815	29,805	29,815	87,0	97 8	100,0	88 0	87,5	”	”	Land and S. E.	Hazy.
4	29.815	29,910	29,888	29,825	29,900	84,8	95,5	93,3	87,2	86,5	”	”	S E.	Mostly clear.
5	29,900	29,888	29,848	29,800	29,855	84,5	98,0	97,0	87 5	85,0	”	”	S. E.	Clear.
6	29,900	29,885	29,855	29,805	29,844	85,5	97,5	100,5	87,2	85.5	”	”	Land & fr. S. E.	Clear.
7	29.885	29,888	29.888	29,848	29,855	86,0	95,5	93,5	86,0	86,0	”	”	Fresh S. E.	Mostly clear.
8	29,805	29,900	29,858	29,884	29,910	85,0	93,3	92,0	88,0	87,0	”	”	Fresh S. E.	Cloudy—lightning and thunder to the Westd.
9	29,910	29.988	29,915	29,910	29,945	85,0	94,8	93,4	87,7	85,6	”	”	S. E.	Mostly cloudy—with thunder and lightning.
10	29,928	29,945	29.920	29,864	29,935	83,5	95,0	88.4	85,6	85,0	”	”	S. E.	Mostly hazy.
11	29,940	29,950	29,918	29,890	29,955	84.4	92,4	90 6	85,6	85,0	”	”	S. E.	Cloudy—distant lightning with thunder.
12	29,945	29,944	29,880	29,875	29.925	83,0	94,0	96 7	87,5	85,7	”	”	Land and S. E.	Flying clouds—lightning with thunder.
13	29,954	29,984	29,950	29,884	29,915	81,5	90,0	91,6	86,0	85,5	”	”	N. W. and S. E.	Hazy.
14	29,944	29,950	......	29,865	29,874	83,0	93,4	....	87,0	86,8	”	”	Land.	Hazy.
15	29,878	29,875	......	29.845	29,860	83,8	94.8	....	87,0	87,5	”	”	S. E.	Cloudy—some rain.
16	29,845	29,885	29,855	29,888	29,900	82,0	93.5	93,0	86,5	84,4	”	”	S. E.	Cloudy and lightning.
17	29,905	29,988	29,916	29,910	29,955	82,0	92,0	93,6	93,0	91,5	”	”	N. W.	Hazy.
18	29.978	29,978	29,965	29,910	29,940	85,5	94,5	94,0	87,0	87,0	”	”	N. W. and S. E.	Hazy.
19	29.925	29,930	29,888	29,855	29,858	86,0	93,5	96,0	85,5	85,2	”	”	Land and S. E.	Cloudy—some rain.
20	29,900	29,905	29.888	29,900	29,880	84,4	90,5	92,0	86,0	85,5	”	”	Land.	Hazy.
21	29,865	29,870	29,832	29,800	29 815	83,3	93,5	90,0	84,0	85,0	”	0,4	S. E.	Cloudy—rain.
22	29,900	29,866	29,835	29,830	29,850	83,0	92.6	95.2	87,0	87,4	”	”	Land and S. E.	Cloudy.
23	29,848	29,930	29,980	29,870	29,900	82.5	92,2	93,0	87,0	86,4	0,4	”	Land and S. E.	Mostly clear—cloudy at one time—some rain.
24	29,915	29,910	29,915	29.880	29,900	83.0	93,0	93,4	86,2	86,0	”	”	Land.	Clear and cloudy.
25	29 915	29,900	29,834	29,855	29,958	84,0	93 5	96.0	85,0	85.2	”	0,4	Land and S. E.	Cloudy.
26	29.888	29,885	29,788	29,800	29,825	82,6	92.6	95,0	87,2	87,0	”	”	S. E.	Cloudy—some rain.
27	29.850	29 835	29.815	29,800	29,805	80,6	93,2	92,8	87,0	85,5	0,3	”	S. E.	Hazy.
28	29,815	29 828	29,818	29.825	29,818	83,0	91,0	91.5	85,8	84,0	”	”	Land and S. E.	Cloudy—some rain.
29	29,828	29,838	29,838	29 800	29,805	82,5	92 2	92,8	85,5	85,0	0,5	”	S. E.	Cloudy—some rain—distant lightning.
30	29,810	29,825	29,768	29.715	29,755	80,6	90,8	95,0	86,0	85.0	1,0	”	S E.	Cloudy—some rain.

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height....	29,938	100,5
Least Height.......	29,715	80 6
Mean............	29,8515	90,55
Extreme Difference..	00,273	19,9

	Rain Inches.
Observed....	3,0
Reduced....	0,75

PHASES OF THE MOON.

	D.	H.	M.
New Moon..................	4	4	34 M.
First Quarter..................	12	4	12 M.
Full Moon..................	18	8	49 A.
Last Quarter..................	25	4	7 A.

In this Month

The Moon had receded to the greatest distance on the 4th.

The nearest approach of the Moon to the Earth was on the 18th.

July 1818.

Days.	BAROMETER.					THERMOMETER (*exposed to a free Current of air.*)					RAIN GAUGE.		WINDS.	WEATHER, &c.
	Sun rise.	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*Sun rise.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*From Sun set to Sun rise.*	*From Sun rise to Sun set.*		
	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	29.780	29,818	29,900	29,850	29,825	80,0	88.0	85,0	84,4	78,0	0,8	,,	Land.	Cloudy—some rain.
2	29,885	29,915	29,845	29,800	29,855	77,8	81,5	82,0	81,5	82 0	0,2	,,	Land and calm.	Cloudy.
3	29,900	29 905	29,850	29,880	29 900	79,0	91,5	92,6	82,0	79,0	,,	,,	Land and S. E.	Cloudy—some rain.
4	29.885	29.868	29,855	29,815	29,855	80,5	90,0	93,3	85,5	85,0	2,8	,,	S. E.	Clear and cloudy.
5	29,900	29.915	29,900	29 855	29.880	82,0	90,5	92,5	85,0	84,4	,,	,,	Land and S. E.	Cloudy and lightning.
6	29,900	29,925	29,900	29,865	29,880	80,0	88,0	88.5	84,8	84,5	,,	,,	Land and S. E.	Mostly cloudy.
7	29,900	29,900	29,888	29,855	29,865	81,0	89,4	90,4	90,0	88,2	,,	,,	S. E.	Mostly cloudy.
8	29.900	29,900	29,900	29,924	29,945	83,0	93,5	84,5	83,0	83,0	,,	0,8	Land.	Cloudy and rain.
9	29,948	29.955	29,950	29 956	29,938	80,6	89,8	88 0	85,0	83,5	0,2	,,	Land and S. E.	Cloudy—some rain—lightning.
10	29.940	29,940	29,900	29 805	29,900	80,0	87,2	90,0	83.0	83,0	2 0	,,	Land and S. E.	Cloudy—some rain.
11	29,910	29,888	29,878	29 825	29,820	80,6	89,8	89,0	80,5	81,2	5,0	,,	Land.	Cloudy.
12	29,888	29,900	29,885	29.835	29 840	79,0	86,8	87,7	85,0	84,5	,,	,,	Land and S. E.	Hazy.
13	29,900	29,885	29,845	29 888	29,900	80,0	89,8	91,4	85,0	84,0	,,	,,	S. E.	Cloudy.
14	29,915	29,965	......	29.838	29 900	80,0	90.0	....	83.5	83,0	,,	,,	Land.	Cloudy.
15	......	30,000	29.955	29,988	30,000	....	88,8	91,0	84,5	84,0	,,	,,	N. W. and S. E	Hazy.
16	29,987	29,988	29 985	29,980	29,955	80 0	89,2	86,5	84,2	83,3	,,	,,	Land and S. E.	Hazy.
17	29,900	29,955	29.900	29 915	29,900	79,8	83,3	84,0	82,5	80,0	,,	,,	N. W.	Cloudy—heavy rain.
18	29,915	29,988	29,900	29.920	29,950	77,7	82,2	84,0	81,2	81,5	9,5	0,5	Variable.	Cloudy—some rain.
19	29,988	30,005	30,000	29.955	29,958	78,0	84,2	84,0	84,0	83,7	8,8	,,	S. E.	Clear.
20	29,955	30,000	......	29 905	29 918	80,0	85,0	....	82,0	82.0	,,	,,	Calm and S. E.	Clear—lightning in the S. W. Quarter.
21	29,988	29,888	29,825	29,805	29 800	79,2	89,0	88,0	82,5	82,0	,,	,,	S. E.	Clear.
22	29.900	29.868	29,868	29.805	29,855	80,0	86,0	86,5	85,0	82,0	,,	,,	S. E.	Clear.
23	29,870	29,885	29.865	29,880	29,875	78,0	89,2	87,0	85,0	84,5	,,	,,	N. E. and S. E.	Hazy—some rain.
24	29,900	29,900	29,858	29,805	29.820	74,5	80,0	81,2	82,0	81,5	17,0	3,4	N. W.	Cloudy and hazy.
25	29.800	29,805	......	29.788	29,800	78,0	86,0	....	84.0	84,0	,,	,,	S. E.	Clear.
26	29.800	29,850	29,800	29,768	29,800	79,2	88,0	89,8	83,6	84,0	,,	,,	Land.	Clear.
27	29,816	29,865	29,840	29.800	29.855	80,2	88.5	87,0	84,0	84,5	,,	,,	S. E.	Clear—lightning all round.
28	29,845	29.858	29,800	29,755	29,800	80,0	90,5	88,2	86,0	84.5	,,	,,	S. E.	Clear—distant lightning in the N. W. Quarter.
29	29.805	29.800	29,748	29,755	29,830	82,0	90.8	90,2	83,4	85,2	,,	,,	S. W. and S. E.	Clear—distant lightning.
30	29 825	29,850	29,858	29,855	29,870	81,5	90.0	91,2	84,0	84,2	,,	,,	S. E.	Clear—hazy.
31	29,900	29,900	29.858	29,845	29.900	80,0	91,0	90,4	84,5	85,0	,,	,,	Land and S. E	Mostly clear and hazy—a rainbow at a distance.

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height....	30,005	93,5
Least Height......	29,748	74,5
Mean.............	29,8765	84,0
Extreme Difference.	00,257	19,0

	Rain. Inches.
Observed......	51,0
Reduced	12,75

PHASES OF THE MOON.

	D.	H. M.
New Moon.................	3	7 39 A.
First Quarter..............	11	0 58 A.
Full Moon.................	18	3 35 M.
Last Quarter...............	25	5 54 M.

In this Month

The Moon had receded to the greatest distance on the 1st.

The nearest approach of the Moon to the Earth was on the 16th.

August 1818.

Days.	BAROMETER.					THERMOMETER (*exposed to a free Current of air.*)					RAIN GAUGE.		WINDS.	WEATHER, &c.
	Sun rise.	*Noon.*	2 o'clock.	*Sun set.*	9 o'clock.	*Sun rise.*	*Noon.*	2 o'clock.	*Sunset.*	9 o'clock.	*From Sun set to Sun rise.*	*From Sun rise to Sun set.*		
	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	29,850	29,905	29,886	29,840	29,850	82,0	88,0	85,4	85,0	84,0	1,0	0,4	Land and S. E.	Cloudy—some rain.
2	29,850	29,860	29,866	29,855	29,866	82,0	89,5	89,0	85,0	83,5	,,	,,	S. E.	Clear, and lightning to the South.
3	29.885	29,858	29,820	29.778	29,820	80,0	88,8	84,1	85,0	84,5	,,	,,	Land and S. E.	Cloudy.
4	29,880	29,835	29,830	29,800	29,800	81,0	87,0	87,2	85,0	84,5	,,	,,	Land.	Cloudy.
5	29,800	29 848	29,855	29,800	29.820	78,0	85 2	87,7	84,2	83,8	,,	,,	Land and S. E	Cloudy—rain—and lightning.
6	29,800	29,900	29.855	29,850	29,856	79,0	83,5	84,2	83,5	83,0	1,0	,,	Land and calm.	Cloudy.
7	29,800	29,865	29.880	29,800	29 845	79,0	84,5	86.0	81,0	81,5	,,	,,	Land and calm.	Hazy and cloudy.
8	29,788	29,820	29,780	29,788	29,805	80,0	85,5	86,0	81,4	81,2	,,	,,	Land.	Cloudy and rain.
9	29,788	29,808	29,800	29,735	29,800	79,0	87,5	88,0	86,0	84,0	0,3	,,	Calm, land & S. E.	Cloudy—halo round the Moon.
10	29,804	29,855	29,800	29,800	29,820	80,0	89,0	90,2	87,0	87,0	,,	,,	Fresh land.	Hazy, and cloudy alternately.
11	29,888	29,878	29,855	29,800	29,860	80,0	90,0	91,0	88.7	86,5	,,	,,	Land.	Clear.
12	29,870	29,900	29,838	29,788	29,830	80,5	90,0	92,5	92,0	87,5	,,	,,	Land and N. E.	Cloudy.
13	29,855	29,860	29,815	29,800	29,828	80,5	91,4	93,0	84,6	84,0	,,	,,	Land and S. E.	Hazy.
14	29,800	29,868	29,836	29,825	29,838	83,0	90 0	89,8	84,0	84 5	1,2	,,	Land and S. E.	Cloudy—some rain at night.
15	29,885	29,900	......	29,845	29,855	79,2	87,7	.....	84.0	85,0	,,	,,	Land and S. E.	Coudy.
16	....	29,878	......	29 825	29,844	....	88,0	.....	84,0	84,5	,,	,,	S. E.	Flying clouds.
17	29,880	29,900	29,888	29,828	29,840	80,2	87,2	89,0	84,8	84,0	,,	,,	Land.	Hazy.
18	29,865	29.868	29,825	29,800	29.820	79.8	89,0	90,2	83,5	83,0	,,	,,	Land.	Hazy.
19	29,880	29,868	29.820	29,788	29,800	80,8	89,2	91,0	89,0	87,0	1,0	,,	Land and S. E.	Hazy.
20	29.800	29,818	29,810	29,780	29,760	80,0	87,2	86,5	78,0	78 0	,,	3,0	Land and S. E.	Cloudy and rain.
21	29,735	29.735	29,700	29,678	29,700	74,0	84,3	86,5	80,0	70,0	1,5	0.5	Land.	Cloudy—some rain.
22	29,780	29,757	29,750	29,725	29,780	75,5	87,8	86,8	79,0	79,5	,,	3,0	Land.	Cloudy—some rain.
23	29,700	29,855	29,800	29,804	29,865	78,0	86,6	86,0	81,2	79,0	1,0	0,8	Land.	Cloudy—some rain.
24	29,880	29,880	29,840	29,825	29,855	77 8	86,5	87,7	84,0	80,8	4,4	,,	Land and S. E.	Cloudy.
25	29,850	29,900	29,850	29,820	29,800	79.8	86.6	86,5	84,2	83.5	,,	,,	Land and S. E.	Clear.
26	29 900	29,908	29,888	29.825	29,850	78,5	88,2	86,6	80,0	80,7	,,	1,6	Land and S E.	Cloudy and rain.
27	29,900	29,910	29,850	29.800	29,855	78,0	85,4	84,2	82,5	83,3	4,5	,,	Land.	Cloudy—some rain.
28	29,900	29,920	29,860	29.868	29,828	79,0	84.5	86,5	82,6	80,8	0,4	,,	Land and S. E.	Cloudy—some rain.
29	29,800	29,915	29,885	29,845	29,855	80,0	85,4	86,5	84,2	82,5	,,	,,	Land and S E.	Cloudy.
30	29,900	29 900	29,920	29.815	29,818	80 0	86,0	85,5	83,5	81,5	,,	,,	Land.	Cloudy and hazy.
31	29,850	29.900	......	29,815	29,855	80,2	87,5	.....	84,5	82,8	,,	,,	S. E.	Cloudy.

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height....	29,920	93,0
Least Height.......	29,678	70,0
Mean..............	29,979	81,5
Extreme Difference..	00,242	23,0

	Rain Inches.
Observed....	25,6
Reduced.....	6.4

PHASES OF THE MOON.

	D.	H.	M.	
New Moon..............	2	9	43	M.
First Quarter............	9	7	44	A.
Full Moon..............	16	11	26	M.
Last Quarter............	23	10	33	A.
New Moon..............	31	10	49	A.

In this Month

The nearest approach of the Moon to the Earth was on the 13th;
The Moon had receded to the greatest distance on the 25th.

September 1818.

Days.	BAROMETER.					THERMOMETER (*exposed to a free Current of air.*)					RAIN GAUGE.		WINDS.	WEATHER, &c.
	Sun rise.	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock*	*Sun rise.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*From Sun set to Sun rise.*	*From Sun rise to Sun set.*		
	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	29,900	29,940	29,900	29,845	29,855	81,0	86,0	88,2	87,5	84,5	,,	,,	Land and calm.	Cloudy.
2	29,920	29,962	29,900	29,855	29,868	81,2	89,2	91.0	82,5	81,8	,,	,,	Land and S. E.	Hazy—distant lightning.
3	29 910	29.930	29,888	29,865	29,860	79,0	88.6	90,0	81,0	80,0	1,0	0,8	Land.	Cloudy and rain.
4	29,888	29 918	29,848	29,825	29,858	78,8	86,2	86,5	82,5	82.5	3,6	2,2	Land and S. E.	Cloudy—some rain.
5	29,900	29,888	29,855	29.815	29,827	79,0	86,2	88 0	83.5	81,7	2,5	,,	Land and S E.	Hazy.
6	29,900	29,885	29,880	29 855	29,850	78,0	80,5	81,5	82,0	80,6	,,	,,	Land and S. E.	Hazy and clear alternately.
7	29,920	29,960	29,928	29,945	29,912	79,5	86,2	92,0	84,5	81,8	,,	,,	Land N. W.	Cloudy—lightning.
8	29,940	29,940	29,885	29,855	29,912	79,0	87,5	89,2	84,5	83,0	,,	,,	Variable.	Cloudy—clear and hazy.
9	29,925	29.910	29,880	29.825	29,905	80,0	87,7	89,5	84,2	82 5	,,	,,	Land and S. E.	Hazy.
10	29,900	29,900	29.855	29,830	29,870	79,0	87,5	89,0	85,2	84.0	,,	,,	Calm and S. E.	Clear.
11	29,900	29,904	29,860	29,845	29,860	82,0	86,2	86,8	85,2	84,5	,,	,,	Land and calm.	Cloudy.
12	29,855	29,925	29,888	29,885	29 860	83,2	84,0	83,5	82.5	80,0	,,	,,	Land. [N W to S E	Cloudy.
13	29,860	29,900	29,835	29,804	29,835	78,0	87,2	88,5	84,4	83 5	,,	,,	Calm & var. from	Mostly hazy and cloudy.
14	29.880	29,870	29 827	29,800	29,850	79,8	87,0	88.4	84,2	82,5	,,	,,	Land & S. E.	Hazy and clear.
15	29,855	29.888	29,844	29,820	29,860	79,8	86,0	88,0	84,2	82,0	,,	,,	Land calm & S.E.	Hazy.
16	29 850	29,920	29,900	29,885	29,856	79,0	85,2	86,2	83,5	83,0	,,	,,	N. W. c. & S. E.	Hazy and cloudy.
17	29,935	29,960	29 918	29,912	29,940	80,0	88,4	90,2	85,2	84,5	,,	,,	Calm N.W. &SE	Clear.
18	29,950	29,978	29,925	29,915	29,920	81,0	88,8	89,2	85,0	83,5	,,	,,	Calm N.W. &SE	Hazy.
19	29,950	29,940	29,900	29,865	29,915	81,5	90,0	89,0	85,5	84,0	,,	,,	Variable & S. E.	Hazy.
20	29,900	29,930	......	29,900	29,915	79,8	86,2	....	83,8	80,8	1,0	,,	Variable.	Hazy.
21	29.950	29,978	29,928	29,900	29,975	78,8	84,8	88,0	84,0	83,5	,,	,,	Variable & S. E.	Cloudy, with lightning and thunder.
22	29,965	29,860	29,910	29,915	29,918	80,2	87,0	85,0	83,5	83,0	3,0	,,	Calm and S. E.	Cloudy—distant lightning.
23	29,945	29,958	29,878	29,878	29,915	78,8	87,0	86,0	82,5	83,0	,,	,,	Calm and S. E	Hazy and rain in the morning.
24	29,888	29,915	29,865	29.834	29,845	78,0	87,7	91,4	81,2	82,0	1,5	,,	Land and S. E.	Cloudy and rain.
25	29,900	29 920	29,870	29,875	29,888	80,8	86,2	87,2	82,0	83,0	4.3	,,	N. W. and S. E.	Cloudy—distant lightning. [thunder.
26	29,900	29,905	29,825	29.880	29,834	78,4	86,5	88,0	81,8	79,0	1,7	,,	Variable & S. E.	Rain—at times heavy—with much lightning and
27	29,800	29,860	......	29,815	29,816	80,0	88,0	....	83,5	84,0	,,	,,	Land and S. E.	Cloudy and hazy.
28	29,818	29,900	29,845	29 840	29,880	78,8	87,0	89,0	85,2	85,0	,,	,,	S E. land & calm	Hazy and cloudy.
29	29,925	29,920	29,910	29,875	29,945	79,2	89,0	90,0	85,2	84,2	,,	,,	Calm land &S. E.	Hazy and cloudy.
30	29,960	29,978	29,915	29,920	29,935	81,2	90,8	90,4	85,6	86,0	,,	,,	Calm land &S.E.	Cloudy and clear alternately.

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height....	29 978	92.0
Least Height......	29.800	78,0
Mean.............	29,889	85,0
Extreme Difference.	00,178	14,0

Rain	Inches.
Observed....	21 6
Reduced......	5,4

PHASES OF THE MOON.

	D.	H.	M.
First Quarter....................	8	1	30 M.
Full Moon	14	9	35 A.
Last Quarter....................	22	5	17 A.
New Moon.......................	30	11	9 M.

In this Month

The nearest approach of the Moon to the Earth was on the 10th.
The Moon had receded to the greatest distance on the 22d.

October 1818.

Days.	BAROMETER. Sun rise.	Noon.	2 o'clock.	Sun set.	9 o'clock.	THERMOMETER (exposed to a free Current of air.) Sun rise.	Noon.	2 o'clock.	Sun set.	9 o'clock.	RAIN GAUGE. From Sun set to Sun rise.	From Sunrise to Sun set.	WINDS.	WEATHER, &c.
	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	29,998	29,975	29,940	29,900	29,960	80,5	88.5	90,5	84,5	83,5	„	„	Land and S. E.	Clear.
2	29,945	29,955	29,900	29.875	29,887	78,2	90,5	91,0	84,2	84,0	„	„	S. E.	Cloudy and rain.
3	29,950	29 855	29,880	29,877	29,920	80.0	87,0	88,0	83,4	84,2	5,0	„	S. E.	Hazy—rain in the morning.
4	29,900	29,920	29,960	29,865	29 900	79,8	89,0	91,5	84,5	84,0	„	„	Land.	Mostly cloudy—distant lightning.
5	29,910	29,968	29.980	29,875	29.950	78,0	81,4	88,5	82,0	82,5	2.8	0,8	S. E.	Cloudy—rain with thunder and lightning.
6	29,925	29,930	29,900	29,855	29,888	78,0	83,3	84,5	82,2	81,5	9 7	„	Land and S. E.	Cloudy—rain at night.
7	29,900	29 915	29,877	29 848	29.877	77,8	87,5	83,0	82.2	82,0	3,8	„	N. W. and land.	Cloudy—rain.
8	29,855	29,870	29,845	29,835	29,860	80,0	86,0	83,5	79,3	79,0	„	„	N. W.	Cloudy—some rain.
9	29,855	29.900	29,880	29,838	29,860	79,5	84,0	83,6	83,0	81,8	0,3	„	N. W. & N E.	Cloudy—some rain.
10	29,860	29 900	29,870	29,850	29,900	79,0	84,0	85 5	83,5	83,5	„	0,3	Calm & N. W.	Cloudy—rain.
11	29,888	29,855	29 900	29,855	29,900	79.0	86,5	84 8	83,5	83,0	„	0,5	Calm & N. W.	Cloudy—rain—lightning.
12	29,904	29,935	29 877	29,880	29 940	80,0	86,5	88,0	84,5	84,0	„	„	Variable.	Mostly clear—lightning with thunder.
13	29,938	29,945	29,908	.. ...	29,955	79,2	88,0	84,4	....	82,5	„	„	Variable.	Cloudy—halo round the moon.
14	29,975	29,978	29,935	29,900	29,960	79,5	87,2	89,4	85,0	83,4	1,8	„	Variable.	Flying clouds—rain.
15	29,950	30,020	29,948	29,950	30,000	80,5	80,0	87,7	83,5	83 6	„	„	S. E.	Clear—the dews at night commencing.
16	29,978	30,000	29,955	29.935	30.000	80,0	87,7	87,4	83.4	82,5	„	„	S. E.	Clear—dew at night.
17	29,955	29,975	29,900	29.910	29,940	79,0	89,4	88,0	84,5	84,2	„	„	S.E.	Clear—dew—lightning.
18	29,935	29,940	29,950	29,900	29.945	79,0	89,9	89,8	85,0	85.5	„	„	S. E.	Clear.
19	29,925	29,978	29,910	29,900	29.930	81,0	89,4	89,8	86,0	84,8	„	„	S. E.	Clear—dew at night.
20	29,955	29,978	29,982	29,900	29,920	73,0	85.2	87,2	84.0	82.0	3,0	„	Calm.	Cloudy—rain in the morning.
21	29,925	29,948	29,884	29 855	29.888	79,0	87 0	84,0	83,5	84,0	5,0	„	Variable.	Cloudy—rain in the morning.
22	29,900	29,930	29 900	29,825	29,870	78,8	86,2	88,0	84,2	82,5	1,5	1,4	Variable.	Cloudy—rain in the morning and afternoon.
23	29,855	29 858	29,815	29,800	29,800	80,0	84,0	81,0	78,7	77,0	„	4,0	Strong N. E.	Hazy—rain.
24	29,525	29,276	29,486	29,650	....	77.0	74,0	74,6	77,0	....	12.0	7,8	Storm from N.E.	Cloudy—rain.
25	29,800	29 900	29,855	29,860	29,900	79,0	85,2	83,0	82.0	82.0	0,7	„	S E [N.W.&S.	Mostly clear.
26	29,950	30,000	29,948	29,935	29,945	80,5	83,5	84,5	83,2	83,5	„	„	S. E.	Clear.
27	30,000	30,070	30,000	30,000	30,025	80.0	85.4	85,5	83,5	82 5	1,5	1,2	N. E.	Cloudy—rainbow—lightning.
28	30,005	30,020	29,958	29,948	29,955	79,7	83,0	83,0	82,5	78,8	„	6,2	Variable.	Mostly clear—heavy rain at night.
29	29,986	30,010	......	29,944	30,000	79,5	81·8	....	81,0	80,2	„	0,5	N. E.	Cloudy—rain.
30	30,000	30,020	29,968	29,960	30,000	79,0	83.5	85,0	83,0	81,2	„	„	N. E.	Cloudy—lightning with some rain.
31	30,025	30,030	29,974	29,965	30,010	79,2	85 2	85,5	83,0	82 5	„	1.8	N. E.	Mostly clear.

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height......	30.070	91,5
Least Height........	29,276	74,0
Mean..............	29 673	82,75
Extreme Difference..	00,794	17.5

Rain	Inches.
Observed.....	71.6
Reduced......	17,9

PHASES OF THE MOON.

	D	H.	M.
First Quarter..............	7	7	26 M.
Full Moon.................	14	10	50 M.
Last Quarter...............	22	0	51 A.
New Moon................	29	10	49 A.

In this Month

The nearest approach of the Moon to the Earth was on the 4th.
The Moon had receded to the greatest distance on the 19th.

On the 24th the Wind which was a strong Gale from the Northward early in the morning, had increased before 10 o'clock to a Storm—about this time a lull occurred which lasted more than half an hour after which it blew a complete hurricane from the South, and with a fury never before perhaps known at Madras. Some of the oldest Trees which had braved the Storms of 1807 and 1811 were rooted up;—the largest branches of other trees were torn off by the force of the Wind—in some Trees, of a tough description of Wood, the branches were seen broken and hanging down completely twisted—such a scene of desolation has scarcely been witnessed here—numbers of the Native habitations were levelled, many of the larger buildings injured, and some lives were lost.

There were some Ships and two Brigs in the Roads which all got under sail; but the Brigs went on shore near St. Thome—and one of the Ships (the Charlotte) foundered a little to the Southward of that place; while going out another Ship of 600 Tons Burthen, which had left Madras some days, was first driven to the Southward, and to the Northward when the wind shifted; she was seen during the Hurricane passing the Fort, with only one Mast standing, and went on shore a short distance North of the Black-Town—The Lady Castlereagh, formerly an Indiaman, and just filled with a Cargo of Cotton on account of the Company, being dismasted was only able to make Sadras—and proceeded subsequently to Cuddalore, where after the Cargo was landed, she was condemned.

The Barkworth and Wanstead two of the other Ships* have not been heard of.

November 1818.

Days.	BAROMETER.					THERMOMETER (*exposed to a free Current of air.*)					RAIN GAUGE.		WINDS.	WEATHER, &c.
	Sun rise.	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*Sun rise.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*From Sun set to Sun rise.*	*From Sunrise to Sun set.*		
	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	30,000	30,046	......	30,020	30,000	81,0	85,0	....	83 0	82,5	,,	,,	N. Easterly.	Mostly clear—dew on the ground in the morning.
2	29.978	30,020	29,978	29 965	30,000	79.0	85,0	85,0	83,0	81,5	0,7	,,	N. E.	Mostly cloudy—rain at night.
3	30,000	30 045	30,000	30,004	30,040	77.5	84,2	84,4	82,5	81,5	,,	,,	N. E.	Clear—dew at night.
4	30,015	30,060	30,014	30,000	30,030	76,0	83.5	84,0	81,0	80,2	,,	,,	N. E.	Clear—dew.
5	30,000	30,028	30,000	30,000	30,000	75.0	84,5	85,2	82 5	80,4	,,	,,	N. E.	Clear—dew.
6	30,000	30,040	30,010	30,010	30,020	75,0	82,8	84 4	83,8	81,4	,,	,,	Light N. E.	Clear—dew.
7	30,025	30,040	30,010	30,000	30,020	78,0	83,5	84,2	82,0	80,5	,,	,,	Calm.	Clear—heavy dew.
8	30,030	30,018	30.100	30,010	30,030	78,0	84,5	81,0	83.0	81,2	,,	,,	N. E.	Cloudy.
9	30,060	30,100	30,030	30,030	30,020	81,0	82,6	83.5	82,5	81,8	,,	1,7	N. E.	Cloudy—some rain.
10	30,060	30,100	30,040	30,020	30.060	81,5	84,2	84,2	81,5	81,0	0,5	,,	N. E.	Hazy—some rain.
11	30,050	30,100	30,046	30,030	30,075	77,5	83,5	84 4	82 5	81,5	,,	,,	N. E.	Flying clouds.
12	30,055	30.110	30,070	30,050	30 060	76,0	77 4	76,0	77,0	76.5	1,7	6,6	N. E.	Cloudy—rain.
13	30,044	30.060	30,020	30,010	30.044	76 8	80.8	84,2	80,2	80,4	2,0	,,	N. E.	Hazy—some rain.
14	30,010	30.035	30.000	29 968	30,000	78,0	82,5	82,0	76,0	74,0	0,5	3,0	N. E.	Cloudy—rain at night.
15	30 015	30,050	30.010	30,010	......	72 0	76 0	75,0	75.2	....	13,0	16,5	E.	Heavy rain.
16	30,000	30,020	29,978	30,010	......	74,2	78,0	78,0	78,0	....	3,0	2,5	N. E.	Cloudy—rain.
17	29,988	30,018	29.978	29,955	......	75.8	79,0	76.0	77,5	....	8,5	2,5	N. E.	Cloudy—rain.
18	30,020	30,040	30,000	30,000	......	74.0	74,2	75 2	76 4	....	1,2	1,0	N. E.	Cloudy—rain.
19	30 040	30,100	30 030	30,024	30,030	75.5	77,2	80,4	77,2	76.5	1,5	,,	N. E.	Cloudy—rain.
20	30,010	30,020	29,978	29,960	29 970	75,0	83,4	82.4	79.2	78,0	2,4	,,	N. E.	Cloudy—rain at night.
21	29.960	30 000	29 955	29,960	29.958	72,5	78,4	80.8	78,0	77,7	8,8	2,5	N. E.	Cloudy—hard rain at night.
22	29,950	29 970	29 955	29 930	.....	76,0	82,0	80,0	78,0	....	6,0	2,6	N. E.	Cloudy—rain at night.
23	30,000	30,000	29,975	29 970	......	77,0	78,5	78.0	75.5	....	4,8	,,	E.	Heavy rain.
24	29.960	30,000	29,960	29 940	29,950	74,0	80,8	81,0	79,2	79,0	,,	4,0	N. E.	Cloudy—rain.
25	29,950	30,000	29,955	29,940	......	75,0	79 8	79,0	77.5	....	5,0	,,	N. E.	Cloudy—rain.
26	30,000	30,010	29,970	29,978	30.000	77.0	81,5	82 2	79,0	79,2	,,	,,	N. E.	Mostly cloudy—hazy.
27	30,020	30,040	29,998	29,984	30.000	75 0	80,0	80 4	79,0	77,0	,,	,,	N. E.	Flying clouds.
28	30,020	30.048	30,000	30.000	30,000	74,2	79,4	79,8	79.0	76,7	,,	,,	N. E.	Mostly hazy.
29	30,010	30,030	......	29,970	29,980	75,0	78,5	.....	77 0	76.5	,,	,,	N. E.	Cloudy.
30	30.000	30,010	29,960	29,940	29,935	72,0	78,8	78,0	76 2	74.0	,,	,,	Fresh N. E.	Mostly cloudy.

	Barometer. Inches.	Thermometer Degrees.
Greatest Height.....	30,110	85,2
Least Height........	29.935	72 0
Mean..............	30,0225	78,6
Extreme Difference..	00,175	13,2

	Rain. Inches.
Observed........	102.5
Reduced..	25,625

PHASES OF THE MOON.

	D.	H.	M.	
First Quarter....................	5	2	45	A.
Full Moon........................	13	3	10	M.
Last Quarter.....................	21	7	50	M.
New Moon.........................	28	9	48	M.

In this Month

The Moon had receded to the greatest distance on the 16th.

The nearest approach of the Moon to the Earth was on the 29th.

December 1818.

Days.	BAROMETER.					THERMOMETER (*exposed to a free Current of air*)					RAIN GAUGE.		WINDS.	WEATHER, &c.
	Sun rise.	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*Sun rise.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*From Sun set to Sun rise.*	*From Sun rise to Sun set.*		
	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg	inches.	inches.		
1	29,870	29,858	29,820	29,770	......	70,0	70 0	70.4	75,4	....	6.0	11.0	Fresh N. E.	Cloudy—hard rain.
2	29,910	29 960	29,925	29 940	30,000	75 5	79.5	80,4	78,0	78,0	0.2	0 3	S. E.	Cloudy—some rain—rainbow.
3	30.040	30 050	30,000	30,000	30,030	76,0	79.8	81 2	79.4	78,8	6.0	2,0	S. E.	Cloudy—rain.
4	30.030	30.040	30,010	30,000	30,020	78 0	82,2	83,0	79 0	78,2	0,2	,,	S. E.	Mostly clear.
5	30,040	30,060	30,045	30,015	30,040	75.5	79 5	78,8	78,0	77,2	,,	,,	S. E.	Clear.
6	30,020	30,035	30,014	30,020	30 040	74,0	80,8	81,0	79,0	78,8	,,	,,	N. E.	Clear.
7	30,025	30.045	30.000	29,970	30,000	72,5	80,8	81,2	79,4	79,0	,,	,,	N E.	Cloudy—rainbow towards the east.
8	30.000	29,988	29,935	29,942	29,960	77,6	81,5	82.4	79.0	79,0	,,	,,	N. E.	Cloudy.
9	29,980	30.000	29,955	29,960	29.984	78,0	82,5	83,0	81.4	80,4	0,3	,,	N E.	Mostly cloudy—rain at night.
10	30,028	29.960	30 020	30 010	30,040	78.0	82,5	82 0	81,0	80,2	,,	,,	N E.	Cloudy.
11	30,050	30,088	30,060	30.044	30 070	78,0	82.8	80.8	80,2	78,8	,,	,,	N. E.	Clear—hazy.
12	30.100	30,100	30,048	30.048	30,080	76 0	81.8	82,0	80,2	79,0	,,	,,	N. E.	Clear.
13	30,088	30.100	30,040	30.025	30.040	75 5	82.2	80,6	79,8	78,0	,,	,,	N. E.	Clear.
14	30.040	30,060	29 986	29 985	29 988	76 0	82 4	82,0	80,0	79,8	,,	,,	N. E.	Cloudy.
15	30 020	30,100	30 046	30,045	30,100	77.0	82,5	82 5	80,5	79,0	,,	,,	N. E.	Hazy.
16	30,100	30,120	30 100	30,100	30,120	77 0	83 2	84 0	80,5	80,0	,,	,,	N E.	Clear—clouds at times.
17	30.108	30,140	30 100	30 110	30,120	76 0	81,0	80 8	78,5	77,4	,,	,,	N E.	Hazy.
18	30 100	30,120	30.124	30.070	30,100	73 5	79,2	80,0	79,5	75,5	,,	,,	N. E.	Clear.
19	30.100	30.100	30,065	30,060	30,100	71.5	79 5	80,2	77.0	75 5	,,	,,	N. E.	Clear.
20	30,065	30,070	30,045	30 046	30,050	74 0	77 0	78 0	76.0	75.5	,,	,,	N E.	Hazy—clear.
21	30,100	30 110	30,070	30 060	30.100	75.2	81 0	80.5	79,2	77,5	,,	,,	N. E.	Hazy—some rain.
22	30.100	30,120	30,075	30 070	30,120	74,0	80,6	81.2	78,2	76,0	,,	,,	N E.	Clear.
23	30 078	30,120	30,100	30,100	30,140	72.0	79 2	79 8	78,0	77 0	,,	,,	N. E.	Clear.
24	30,120	30.160	30,115	30,110	30 160	74 0	80,5	79.8	77,0	77,0	,,	,,	N. E.	Clear.
25	30.178	30 200	30,130	30,130	30.170	73,0	80 4	80,5	78,8	77,7	,,	,,	N. E.	Clear.
26	30.160	30,170	30,135	30,100	30.150	76 6	79,6	80,5	78,0	77,2	,,	,,	N. E.	Clear.
27	30,140	30,178	......	30,125	30,170	74 0	80,2	. ..	78,2	77,8	,,	,,	N. E.	Clear.
28	30,140	30,140	30,120	30,090	30,114	75 0	75,8	78,2	74,0	73,6	,,	,,	N. E.	Cloudy—some rain.
29	30,110	30,100	30,068	30,060	30 070	73 0	79,4	79,8	77 5	77,0	,,	1,7	N. E.	Cloudy—rain.
30	30 065	30,100	30.088	30,100	30 110	76 0	78 8	80,8	78,0	77 5	2,4	,,	N E.	Mostly clear.
31	30.120	30 128	30,100	30,100	30 120	76.0	79.7	77,8	78,0	77,2	,,	1,0	N. E.	Clear.

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height.....	30.200	84.0
Least Height.......	29,770	70.0
Mean..............	29 985	77.0
Extreme Difference...	00,430	14,0

Rain	Inches.
Observed......	31,1
Reduced......	7.78

PHASES OF THE MOON.

	D.	H.	M
First Quarter........	5	0 40	M.
Full Moon..........	12	9 40	A.
Last Quarter........	21	0 53	M.
New Moon..........	27	8 13	A.

In this Month

The Moon had receded to the greatest distance on the 14th.
The nearest approach of the Moon to the Earth was on the 27th.

TABLE of the MEAN, GREATEST, and LEAST Heights; with the EXTREME DIFFERENCES, of the BAROMETER, and THERMOMETER-exposed; together with the FALL of RAIN at the MADRAS OBSERVATORY in the year 1818.

MONTHS.	BAROMETER.				THERMOMETER (exposed to a free Current of air.)				RAIN GAUGE.	
	Mean.	*Greatest.*	*Least.*	*Extreme difference.*	*Mean.*	*Greatest.*	*Least.*	*Extreme difference.*	*Observed.*	*Reduced.*
	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	inches.	inches.
January	30,120	30,240	30,000	00,240	77,70	86,4	69,0	17,4	,,	,,
February	30,100	30,200	30,000	00,200	79,85	91,0	68,7	22,3	,,	,,
March	30,0565	30,145	29,968	00,177	79,70	91,2	68,2	23,0	,,	,,
April	30,0465	30,165	29,928	00,237	84,00	91,5	76,5	15,0	2,4	0,6
May	29,8975	30,040	29,755	00,285	91,90	103,8	80,0	23,8	,,	,,
June	29,8515	29,988	29,715	00,273	90,55	100,5	80,6	19,9	3 0	0,75
July	29,8765	30,005	29,748	00,257	84,0	93,5	74,5	19,0	51,0	12,65
August	29,799	29,920	29,678	00,242	81,5	93,0	70,0	23,0	25,6	6,4
September	29,889	29,978	29,800	00,178	85,0	92,0	78,0	14,0	21,6	5,4
October	29 673	30,070	29,276	00,794	82,75	91,5	74,0	17,5	71,6	17,9
November	30,0225	30,110	29,935	00,175	78.5	85,2	72,0	13,2	102,5	25,625
December	29,985	30,200	29,770	00,430	77,0	84,0	70,0	14,0	31,1	7,78

	BAROMETER.	THERMOMETER EXPOSED.	RAIN GAUGE.	
			Observed.	*Reduced.*
	inches.	degrees.	inches.	inches.
General Mean	29,943	81,9	308,8	77,2
Greatest Height	30 240	103,8		
Least Height	29,276	68,2		
Extreme Difference	00,964	035,6		

During this year

The Moon was near the Earth on the 20th of May and 18th of June—but not so near as on the 27th of December, when it was nearest.

The Moon was at the greatest distance from the Earth on the 7th of May and the 14th of December.

METEOROLOGICAL TABLES.

PART V.

METEOROLOGICAL JOURNAL

KEPT IN THE

MADRAS OBSERVATORY

IN THE YEAR 1819.

January 1819.

Days.	BAROMETER.					THERMOMETER (*exposed to a free Current of air.*)					RAIN GAUGE.		WINDS.	WEATHER, &c.
	Sun rise.	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*Sun rise.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*From Sun set to Sun rise.*	*From Sun rise to Sun set.*		
	inches.	inches.	inches.	inches.	nches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	30,110	30,120	30,084	30,075	30,100	72,5	79,8	79,6	77,2	76,2	"	"	N. Easterly.	Clear and cloudy alternately.
2	30,110	30,077	30,040	30,040	30,055	72,0	79,2	79,2	78,2	75,5	"	"	N. E.	Clear—hazy
3	30,045	30,060	30,025	30,000	30,020	72,5	79,0	80,0	75,8	75,0	"	"	N. E.	Clear—dew at night.
4	30,030	30,028	30,012	30,008	30,020	70,0	78,0	78,8	77,0	74,5	"	"	N. E.	Mostly clear—dew at night.
5	30,015	30,040	29,977	30,000	30,020	71,0	77,8	79,2	76,6	74,5	"	"	N. E.	Clear.
6	30,020	30,044	29,988	30,000	30,000	70,0	79,2	79,4	75,0	74,0	"	"	N. E.	Clear.
7	30,005	30,030	30,000	30,000	30,030	....	75,5	76,5	73,5	73,0	"	"	N. E.	Clear.
8	30,010	30,020	30,000	30,000	30,040	67,0	76,0	77,0	74,0	71,8	"	"	N. E.	Hazy—flying clouds.
9	30,035	30,040	30,000	29,998	30,020	68,0	77,2	77,5	75,5	75,0	"	"	Fresh N. E.	Mostly clear.
10	30,020	30,010	30,015	30,000	30,010	70,0	77,0	79,2	76,5	75,2	"	"	N. E.	Clear—hazy.
11	30,016	30,040	......	30,015	30,030	69,0	78,0	....	76,0	74,0	"	"	N. E.	Clear.
12	30,010	30,040	......	30,000	30,010	64,0	79,2	....	75,5	72,8	"	"	N. E.	Clear.
13	30,000	30,060	29,985	30,015	30,030	64,0	80,4	80,5	77,0	72,8	"	"	Calm.	Clear.
14	30,050	30,078	30,042	30,040	30,060	65,0	77,5	78,5	74,8	71,5	"	"	Light N. E.	Clear.
15	30,068	30,100	30,035	30,040	30,055	66,0	78,0	79,2	75,0	73,3	"	"	Calm.	Clear.
16	30,030	30,070	30,020	30,010	30,020	66,0	78,8	80,0	76,0	72,0	"	"	S. E.	Clear.
17	30,010	30,040	......	30,010	30,020	66,3	78,8	....	76,0	72,5	"	"	Calm.	Clear.
18	30,020	30,060	30,000	30,000	30,090	67,0	79,0	80,0	77,0	74,0	"	"	Light S. E.	Clear.
19	30,050	30,045	29,984	30,000	30,030	65,0	80,0	80,6	78,0	77,0	"	"	Light S. E.	Clear.
20	30,060	30,070	30,078	30,010	30,040	68,0	80,5	80,5	78,0	76,4	"	"	S. E.	Clear.
21	30,030	30,070	30,020	30,010	30,010	70,0	80,5	80,2	77,2	76,0	"	"	S. E.	Clear.
22	30,015	30,040	30,000	29,968	30,010	70,5	80,5	80,0	78,0	76,0	"	"	S. E.	Clear.
23	30,030	30,100	30,050	30,040	30,040	66,7	80,5	81,5	76,5	74,0	"	"	S. E.	Clear—heavy dew at night
24	30,036	30,110	30,066	30,045	30,100	65,2	79,2	80,0	78,5	75,2	"	"	Calm.	Clear.
25	30,100	30,100	30,025	30,020	30,040	67,0	78,8	80,5	78,0	74,5	"	"	Variable.	Clear.
26	30,040	30,070	30,038	30,010	30.060	65,5	79,5	81,0	78,5	76,2	"	"	S. E.	Clear.
27	30,070	30,100	30,045	30,030	30,100	68,8	80,2	82,0	79,5	76,7	"	"	S. E.	Clear.
28	30,110	30,130	30,100	30,105	30,100	70,0	80,6	82,4	78,5	77,0	"	"	S. E.	Clear.
29	30,018	30,160	30,100	30,120	30,100	70.5	81,9	82,0	78,0	77,0	"	"	N. E.	Clear.
30	30,150	30.200	30,150	30,130	30,160	69,8	79,0	80,2	78,0	75,5	"	"	N. E.	Clear.
31	30,138	30,170	.....	30,100	30,140	68,8	79,2	....	76,5	74 5	"	"	N. E.	Clear—dew every night of this month.

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height.....	30,200	82,4
Least Height.......	29 968	64,0
Mean..............	30,084	73,2
Extreme Difference..	00,232	18,4

PHASES OF THE MOON.

	D.	H.	M.
First Quarter..................	3	2	0 A.
Full Moon.......................	11	4	57 A.
Last Quarter....................	19	3	4 A.
New Moon........................	26	6	31 M.

In this Month

The Moon had receded to the greatest distance on the 9th.

The nearest approach of the Moon to the Earth was on the 25th.

February 1819.

Days.	BAROMETER.					THERMOMETER (*exposed to a free Current of air.*)					RAIN GAUGE.		WINDS.	WEATHER, &c.
	Sun rise.	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*Sun rise.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*From Sun set to Sun rise.*	*From Sun rise to Sun set.*		
	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	30,110	30,140	30,150	30,100	30,120	66,0	78,5	79,8	77,0	72,5	”	”	N. Easterly.	Clear—dew at night.
2	30,120	30,140	30,125	30,115	30,118	65,0	78,8	80.0	76 5	76,0	”	”	N. E.	Clear—dew.
3	30,100	30,170	30,155	30,150	30,170	66.0	79,0	80 2	78,5	74.5	”	”	N. E.	Clear—dew.
4	30,165	30,220	30,160	30,180	30,170	65,6	80,0	81,5	78,5	75,0	”	”	N. E.	Clear—dew.
5	30,150	30,170	30,145	30,120	30,150	68,5	80.2	81,0	78.5	76 5	”	”	N E.	Clear—dew.
6	30,110	30,140	30,135	30,100	30,115	69,0	81,2	82,0	78,0	75 5	”	”	N E.	Clear—heavy dew on the ground at Sun-rise.
7	30,100	30,120	......	30,055	30,100	68,5	81 0	....	80,0	77,2	”	”	N. E.	Clear—heavy dew.
8	......	30,120	30,100	30,060	30,070	....	81,2	83,0	77.8	77,0	”	”	N. E.	Clear.
9	30.085	30,110	30,100	30,120	30,130	70,0	80,5	81,8	78,0	77,8	”	”	N. E.	Clear.
10	30,100	30,120	30,100	30,185	30,140	70,5	80,5	82,0	78,8	78,0	”	”	Variable.	Clear.
11	30.110	30,150	30,120	30;110	30,110	72.0	81,2	81,4	77.5	76,6	”	”	Variable.	Clear.
12	30,115	30,165	30,140	30,125	30,145	72,0	80,8	81,0	78,4	76,5	”	”	N. E.	Clear.
13	30 130	30,164	30,160	30,110	30,140	69 0	81,0	81,2	79 0	75,0	”	”	N E.	Clear.
14	30.130	30,114	.. ...	30,100	30,055	70.0	80,0	....	78,0	76,2	”	”	N. E.	Clear.
15	30.118	30,100	30,045	30,015	30,044	70,0	81,5	82,0	78,0	72.8	”	”	N E.	Clear.
16	30 018	30,070	30,045	30,025	30,025	67,0	82,5	82,5	80,0	74,5	”	”	Variable.	Clear.
17	30 048	30,100	30,045	30,025	30,060	70,0	83,5	86.2	79,0	74,5	”	”	S E.	Clear.
18	30,015	30,100	30,038	30.020	30,040	70 0	85,2	87,0	81,5	74,2	”	”	Variable.	Clear.
19	30.008	30 060	30,025	30,050	30,080	66,0	84,2	86,2	82.0	78,0	”	”	S E.	Clear.
20	30 075	30,070	30,025	30,040	30,100	68,2	85,2	85,0	80,5	79,2	”	”	Light S. E.	Clear, dew every night to this part of the month.
21	30,085	30,145	......	30,075	30,100	67,5	83,5	....	79,5	78.5	”	”	Variable.	Clear.
22	30.075	30,140	30,110	30,060	30,100	70 0	84,0	83.8	79,8	78,0	”	”	Variable.	Clear—dew.
23	30 110	30,140	30,118	30,100	30,110	68 0	82,5	82,2	79 2	75 8	”	”	S. E.	Clear—heavy dew.
24	30.100	30,130	30,066	30,075	30,100	70 0	84.2	84,4	79 5	77,0	”	”	Variable.	Clear.
25	30 070	30,110	30 078	30,058	30,070	68.8	84,0	84 5	80,4	79,0	”	”	N. E.	Clear.
26	30 060	30,110	30,078	30,025	30,060	72.8	85.4	85,0	82,0	81 5	”	”	N E.	Clear.
27	30,070	30,128	30,100	30,088	30,120	74 0	85.2	85,5	83,5	82.0	”	”	Variable.	Clear.
28	30.120	30,140	......	30,100	30,105	74,5	86,5	....	82,0	80,8	”	”	Variable.	Clear—dew.

	Barometer.	Thermometer.
	Inches.	Degrees.
Greatest Height.....	30.220	87.0
Least Height........	30 008	65 5
Mean...............	30,114	76,25
Extreme Difference..	00,212	21,5

PHASES OF THE MOON.

	D.	H	M.	
First Quarter.................	2	6	45	M.
Full Moon.....................	10	11	36	M.
Last Quarter..................	18	2	00	M.
New Moon......................	24	5	14	A.

In this Month

The Moon had receded to the greatest distance on the 22d.
The nearest approach of the Moon to the Earth was on the 6.h.

March 1819.

Days.	BAROMETER.						THERMOMETER (*exposed to a free Current of air.*)						RAIN GAUGE		WINDS.	WEATHER, &c.
	Sun rise.	10 *o'clock*	*Noon.*	2 *o'clock.*	*Sun set.*	9 *o'clock*	*Sun rise.*	10 *o'clock.*	*Noon.*	2 *o'clock.*	*Sun set.*	9 *o'clock.*	*From Sun set to Sun rise.*	*From Sun rise to Sun set.*		
	inches.	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	30,100	30,125	30,100	30,055	30,050	30,070	75,5	83,0	87,2	86,6	82 5	81,4	,,	,,	S. Easterly.	Clear—dew at night.
2	30,070	30,134	30,110	30,070	30,045	30,100	74 5	82.4	86 2	86,0	82,5	82 0	,,	,,	S. E.	Clear.
3	30,100	30,135	30,100	30 055	30,045	30,060	72,0	82 2	83 5	84 0	82,5	78,5	,,	,,	S. E.	Clear—dew.
4	30,045	30,124	30,114	30,072	30,055	30.100	73.0	80,4	83,4	89,0	80,5	78 5	,,	,,	S. E.	Clear.
5	30,100	30,115	30 100	30 050	30,024	30,040	72,0	80,0	84,5	85,2	83.0	78,4	,,	,,	S. E.	Clear—dew.
6	30,030	30,070	30 050	30,028	30,020	30 050	70,0	80,5	87,3	87,0	83 0	81 5	,,	,,	S. E.	Clear.
7	30.035	30,100	30,070	......	30,035	30,075	73 4	82,0	86,2	.....	83,0	80,0	,,	,,	S. E.	Clear—dew.
8	30,060	30,084	30,070	30,040	30,035	30,050	74,0	80,4	84 8	85.0	80,5	79,0	,,	,,	S. E.	Clear.
9	30,085	30,115	30 100	30,030	30,035	30,040	72,0	81,4	83,4	84,2	83,0	82,5	,,	,,	S. E.	Mostly clear.
10	30,045	30,118	30,100	......	30,015	30,040	73,0	80.8	85,5	....	84,0	82,0	,,	,,	S. E.	Clear.
11	30,020	30,100	30 070	30,050	30,035	30,045	75,0	83 4	85,2	85.5	84 5	82 5	,,	,,	S E.	Clear.
12	30,085	30 118	30,100	30.060	30,040	30,040	75,0	84 0	86,0	86,0	83,3	81,5	,,	,,	S E.	Clear.
13	30,100	30,136	30,103	30,065	30,045	30 050	76 5	84,0	88,2	86 6	84 2	83 5	,,	,,	S. E.	Clear—dew.
14	30,085	30,112	30 088	30 055	30.040	30.060	77,0	84 6	86 5	87,0	83 0	81,	,,	,,	S. E.	Clear.
15	30,100	30.124	30 088	30,080	30.055	30,050	76 5	83 4	88,0	87,8	83,8	81 5	,,	,,	S. E.	Clear.
16	30,088	30,092	30,055	30,060	30,015	30,015	75,5	83,0	86 8	87,5	82,8	82 0	,,	,,	S. E.	Clear—dew.
17	30.008	30,087	30,080	30 055	30,016	30,015	74 5	83,0	85,4	85 5	82.4	81,5	,,	,,	S. E.	Clear—dew.
18	30,055	30,085	30,080	30.058	30,020	30,050	76,0	82,6	86.2	86,5	83.0	82 5	,,	,,	S. E.	Clear—dew still continuing.
19	30.088	30.115	30,100	30.045	29 999	30,025	75,5	83 8	86,6	86,2	84,2	83 8	,,	,,	S. E.	Clear.
20	30.065	30,100	30,045	30,050	29.918	29,965	76,0	83,0	86,2	86,6	84 0	82,8	,,	,,	Calm and S. E.	Clear—hazy.
21	30,000	30,005	30,000	.....	29.934	29,932	76.0	86,2	86,5	.....	84,6	82,0	,,	,,	S. E.	Clear—hazy.
22	30,000	30,040	30,005	29,958	29 928	29,955	77 0	83,5	87,0	86.5	84,2	83 2	,,	,,	S. E.	Clear.
23	30,000	30,048	30,030	30,000	29,965	30,000	76,0	84,0	86 8	86,6	84,0	82,5	,,	,,	S E.	Clear.
24	30,010	30,066	30,050	30 015	29 982	30,000	75 6	84,8	87,2	87.5	84,4	81 8	,,	,,	Calm and S. E.	Clear.
25	30 020	30 068	30,060	30.025	29.988	30,000	78,0	85 8	87,0	87 0	84 0	83,5	,,	,,	S. E.	Clear.
26	30,100	30,124	30 100	30,045	29 995	30,000	78,6	85,0	87,5	88,0	85,0	84 0	,,	,,	S. E.	Clear.
27	30,015	30.014	30 000	29,935	29 895	29,925	78.0	84,6	88,8	88.0	85.6	83 8	,,	,,	S E.	Clear—dew.
28	29.930	29 958	29 950	29.955	29,885	29 915	79 0	88 0	89 6	89,8	84 8	83,5	,,	,,	S. E.	Clear—cloudy alternately.
29	29,940	29 985	30.010	29 975	29 934	29.950	80 0	87,4	89,0	88,8	85,2	83,0	,,	,,	S. E.	Clear.
30	29,940	29,982	29 975	29 940	29 925	29 945	79,6	87,0	89 5	86 6	84 5	83,0	,,	,,	S. E.	Clear.
31	29,948	30 060	30,000	29 945	29.940	29,920	79.8	86,2	89,0	87 0	86 0	85,4	,,	,,	Variable.	Clear and hazy.

	Barometer.	Thermometer.
	Inches.	Degrees.
Greatest Height....	30,136	89.6
Least Height.......	29,885	70 0
Mean...............	30,0105	79,8
Extreme Difference.	00.251	19,6

PHASES OF THE MOON.

	D.	H.	M
First Quarter....................	4	1	52 M.
Full Moon........................	12	4	33 M.
Last Quarter.....................	19	10	2 M.
New Moon.........................	26	4	45 M.

In this Month

The Moon had receded to the greatest distance on the 6th.
The nearest approach of the Moon to the Earth was on the 21st.

April 1819.

Days.	BAROMETER.						THERMOMETER (*exposed to a free Current of air.*)						RAIN GAUGE.		WINDS.	WEATHER, &c.
	Sun rise.	10 *o'clock*	*Noon.*	2 *o'clock.*	*Sun set.*	9 *o'clock.*	*Sun rise.*	10 *o'clock.*	*Noon.*	2 *o'clock.*	*Sun set.*	9 *o'clock.*	*From Sun set to Sun rise.*	*From Sunrise to Sun set.*		
	inches.	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	29.918	29.975	29,960	29,945	29,940	29,960	75,5	85,8	87,5	87.4	84,4	83,0	"	"	Calm and S. E.	Clear—dew at night.
2	30,000	30,026	30,020	29,965	29,964	29,960	78,0	85,5	88,5	87,0	83,8	83,0	"	"	S. E.	Clear—dew.
3	30,000	30,022	30,020	29,955	29,944	30,000	79,8	85,4	88,5	87.5	85,4	82,8	"	"	S. E.	Clear.
4	30,000	30,026	30,020	30,000	29,924	29 940	79,5	84,7	86,0	87 0	84 8	82,5	"	"	S. E.	Clear.
5	29 948	30,014	30,000	29,988	29,920	29,918	80,0	85,5	87,2	87,8	84,0	83.0	"	"	S E.	Clear.
6	29,970	30,008	30,002	29,958	29,915	29,940	80,0	85,5	88,2	88,0	84,8	83,5	"	"	S. E.	Clear.
7	29,955	30,025	30,020	30,000	29,944	29,988	81,0	87,0	89,0	88,5	85 6	84.0	"	"	Fresh S. E.	Clear.
8	30,000	30.035	30,045	30,000	29,948	29 988	80,5	87,0	89,2	89.0	84,0	84,0	"	"	Calm and S. E	Clear.
9	29,955	30,018	30,025	29 988	29,994	29,920	83,0	86,8	89,0	88 8	85,4	84,0	"	"	S. E.	Clear.
10	29 928	29,928	29,964	29,978	29 945	......	81,2	86,6	88,0	88,0	86,5	....	"	"	S. E.	Clear.
11	29,925	29,980	29.970	29,935	29,945	29,940	82,0	87,0	88,0	88 0	86 8	85.5	"	"	Calm and S. E.	Clear.
12	29,948	29.954	29.950	29.910	29 900	29.940	80,8	88,0	88,8	89 0	86,5	85 0	"	"	S. E.	Clear.
13	29,945	29,965	29,960	29,924	29,888	29 960	80,0	87,4	89,0	88,4	86 0	84,5	"	"	LightS W &S. E.	Clear.
14	29 965	29,968	29 960	29,920	29,874	29,942	81,8	86,2	87,8	88,0	85,4	85 0	"	"	Calm and S. E.	Hazy.
15	29 910	29 945	29 970	29 915	29,955	29,940	79,8	88,0	90,0	90,5	85 4	85.0	"	"	Calm and S. E.	Hazy.
16	29 940	29,948	30,000	29,925	29,865	29.940	80,5	87,8	89,2	89,0	87,0	86 4	"	"	S W. & E S E.	Flying clouds—lightning to the [Wd.
17	29 935	29 964	29.974	29 925	29,884	29,960	80,0	88,0	90,2	90,0	87,8	86 6	"	"	Calm and S. E.	Clear.
18	29 925	29 945	29,940	29,946	29,900	29,910	80,2	88,4	90 5	91,0	87,5	86,0	"	"	S. E.	Flying clouds and hazy.
19	29,885	29,875	29,900	29,866	29,788	29,845	79,0	86,4	87,4	87,0	82 5	83,0	"	1.0	E. and N. E.	Cloudy and rain.
20	29 788	29.788	29,815	29,762	29,720	29,725	82 2	86,0	84 8	84 5	81 5	80.0	0.2	3,5	E and Fresh N.	Cloudy and rain.
21	29,655	29,648	29,640	29,610	29.600	29 640	78,0	80,0	80 0	79,0	79 2	79 0	3,5	1.0	N. W.	Cloudy and rain.
22	29,700	29 825	29 835	29 748	29,740	29,800	79,0	79,0	80,2	83 0	83 0	82 5	0,4	0,5	S. W. and S. E.	Cloudy and rain.
23	29 800	29,864	29,860	29,838	29,825	29 850	79,2	83,6	84,0	92 2	85,6	84 2	"	"	Land or W & SW.	Clear.
24	29,830	.. ...	29,900	29 865	29,830	29,900	81 5	....	89,8	91 0	88 0	85,5	"	"	Land and S. E.	Clear.
25	29,885	29 926	29.935	29,900	29,864	29,900	82.5	85,6	90,2	92 2	88,2	85,4	"	"	Land and S E.	Clear.
26	29 910	29,968	29 970	29,935	29,875	29,900	83 5	87,0	88,0	88 0	86,2	85 5	"	"	S. E.	Clear.
27	29.910	29,966	29 935	29 935	29,987	29,935	83 5	85,6	91,2	89 2	84 8	85 0	"	"	Land & Fresh SE	Hazy and clear.
28	29,940	29,918	30 000	29,935	29,885	29 925	83 7	85,4	90 5	88 6	85,6	85 0	"	"	Land & Fresh SE.	Clear.
29	29,945	29 955	29 950	29 925	29,908	29 934	82,0	86,2	89,8	89,2	87 6	87 0	"	"	S. and FreshS E	Clear.
30	29 920	29.926	29,960	29 930	29,878	29 915	82,5	87,2	89.2	88,5	86.4	85,5	..	"	S E	Clear.

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height ...	30,045	92.2
Least Height.......	29,600	75 5
Mean.............	29 8225	83 85
Extreme Difference..	00,445	16.7

	Rain Inches.
Observed....	10,1
Reduced.....	2,5

PHASES OF THE MOON.

	D.	H	M.	
First Quarter.............	2	9	40	A.
Full Moon.............	10	6	26	A.
Last Quarter.............	17	4	8	A.
New Moon.............	24	5	9	A.

In this Month

The Moon had receded to the greatest distance on the 3d.
The nearest approach of the Moon to the Earth was on the 15th.

May 1819.

Days.	Barometer.						Thermometer (exposed to a free Current of air.)						Rain Gauge.		Winds.	Weather, &c.
	Sun rise.	10 o'clock	Noon.	2 o'clock.	Sun set.	9 o'clock.	Sun rise.	10 o'clock.	Noon.	2 o'clock.	Sun set.	9 o'clock.	From Sun set to Sun rise.	From Sun rise to Sun set.		
	inches.	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	deg.	inches	inches.		
1	29 935	29,967	29,975	29 935	29 900	29,935	83,0	85,7	88,5	88,0	87,0	83,5	”	”	S. Easterly.	Clear.
2	29,940	29,968	29 970	29 991	29,908	29,912	83,5	86,4	89,2	89,4	85,6	85,4	”	”	S. E.	Clear.
3	......	29.966	29,960	2 986	29,876	29.888	....	87,0	88,4	88,0	86,4	83,4	”	”	Fresh S. E.	Clear.
4	......	29,945	29 925	29.868	29 846	29 852	....	88,0	89,2	88,5	86 2	84,8	”	”	S. E.	Clear.
5	29 880	29 925	29 930	29 900	29,848	29,900	82,0	88,2	90,8	89 6	86 6	85,5	”	”	S. E.	Clear.
6	29,925	29,955	29,950	29,925	29,900	29 925	83,5	88,6	90,5	89 8	87,5	85,5	”	”	Fresh S. E.	Clear.
7	29 940	29 988	29,988	29,935	29,884	29.935	85,0	87,0	91,2	90,0	87,4	85,5	”	”	S. E.	Clear and flying clouds.
8	29,948	30.025	30,015	29 915	29 876	29,920	86,0	87,2	87,5	89 5	87,8	84,5	”	”	Strong N. E.	Cloudy.
9	29 925	29,925	29.935	29 910	29,846	29,880	84,4	87,2	89,8	89 7	87,4	85,2	”	”	S. E.	Clear.
10	29 900	29,918	29,930	29,900	29,885	29,900	83 4	87.8	89.8	90.2	88.5	85,5	”	”	S E.	Clear and hazy.
11	29,910	29,917	29,925	29,878	29,855	29,860	84,0	89 8	90,2	89 2	87,0	86,0	”	”	S. E.	Clear.
12	29,867	29,936	29,950	29 910	29,866	29,875	84,5	89,6	90,5	90 2	88,2	85,0	”	”	S. E.	Clear.
13	29,845	29,950	29,950	29,915	29,900	29,905	85 0	89 0	90 5	91,6	89 0	85,0	”	”	Fresh S. E.	Clear.
14	29 9.0	29 944	29,955	29 882	29,874	29,900	83.5	88,0	91.5	91,4	89,0	85,5	”	”	S. E.	Clear.
15	29.910	29,935	29,940	29,910	29,885	29.875	85,0	87 4	90 5	90,0	89,0	85,2	”	”	S. E. and S. W.	Clear.
16	29,900	29 945	29 920	29.910	29.888	29,900	85,0	89,5	92,5	91,8	87,0	86,5	”	”	S. E.	Clear.
17	29,900	29,908	29 915	29 900	29,846	29.865	84,5	90.0	91.5	90,5	88,7	86.5	”	”	S. W. and S. E.	Clear.
18	29 900	29 915	29,928	29,900	29,888	29,880	85,0	91,0	93,5	91,2	90 0	85,5	”	”	Fresh S. E.	Clear.
19	29 838	29.950	29 955	29,940	29 887	29.930	83.5	89,2	90,2	90,0	87,0	85,6	”	”	Fresh S. E.	Clear.
20	29 934	29,966	29,975	29,955	29.915	29 945	835,	88,4	90,0	90.0	88,7	87,5	”	”	S. E.	Clear.
21	29,940	29,944	29 915	29,925	29,900	29,915	84 0	89 0	90,2	89,5	88,0	86,0	”	”	S E.	Clear.
22	29 910	29,918	29,920	29 876	29,848	29,875	82,5	89,7	90,2	90,4	88,6	86,0	”	”	S. E.	Clear.
23	29,915	29,940	29,930	29,925	29.885	29,900	82 0	88 8	90 5	91,0	88,0	86,5	”	”	Fresh S. E.	Clear.
24	29 920	29,915	29,910	29,835	29.824	29 888	85.0	88,4	89 8	90,2	87,7	85,5	”	”	S. E.	Clear.
25	29,850	29,855	29 880	29,850	29,815	29.818	85,4	88.4	90,5	90,0	88,0	85 5	”	”	Fresh S. E.	Clear.
26	29,830	29,818	29.825	29 800	29,746	29.775	83 3	89,2	90,6	91,5	88.6	86,0	”	”	S. E.	Hazy and clear alternately.
27	29 770	29.788	29 800	29 760	29,744	29,750	84,0	92,0	90,2	89,2	87.0	86,0	”	”	Variable.	Hazy.
28	29,700	29 757	29 778	29 745	29,725	29 724	83,0	93,0	93,5	96,2	92,0	89 0	”	”	Land.	Hazy
29	29,720	29 767	29,766	29 740	29,728	29 720	86,2	92,0	96.5	97,7	90.0	88 6	”	”	Land.	Hazy and cloudy.
30	29 750	29,815	29,825	29.800	29,764	29 808	86 0	93 0	96 5	96,0	88.6	87 0	”	”	Land.	Clear.
31	29 830	29,876	29,900	29,855	29,825	29,840	86,5	91.7	86.5	95,6	89,0	86.2	”	”	Variable.	Clear.

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height....	30 025	97,7
Least Height......	29.700	82,0
Mean............	29,8625	89,85
Extreme Difference.	00,325	15,7

PHASES OF THE MOON.

	D.	H.	M.	
First Quarter.................	2	4	34	A.
Full Moon	10	5	27	M.
Last Quarter................	16	9	38	A.
New Moon..................	24	6	23	M.

In this Month

The nearest approach of the Moon to the Earth was on the 12th.
The Moon had receded to the greatest distance on the 28th.

June 1819.

Days.	BAROMETER.						THERMOMETER (*exposed to a free Current of air.*)						RAIN GAUGE.		WINDS.	WEATHER, &c.
	Sun rise.	10 o'clock	*Noon.*	2 o'clock.	*Sun set.*	9 o'clock.	*Sun rise.*	10 *o'clock.*	*Noon.*	2 *o'clock.*	*Sun set.*	9 *o'clock.*	*From Sun set to Sun rise.*	*From Sunrise to Sun set.*		
	inches.	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	deg.	inches.	inches.		
1	29,800	29 826	29,855	29,895	29,800	29,840	85,0	93,0	95,5	93,0	86,8	86,2	,,	,,	S. W. or land & S E.	Clear, and cloudy alternately.
2	29 830	29,845	29 855	29,840	29,845	29,844	85,2	93,6	97,5	86 0	86,0	85,0	,,	,,	Land and S. E.	Clear.
3	29 840	29 879	29 885	29 832	29,810	29,845	86 0	92,7	97,2	95 4	87 5	87,0	,,	,,	Land and S. E.	Clear—distant lightning.
4	29 840	29 868	29,887	29,830	29,815	29 830	85 5	94.5	100,0	94,0	90.2	87,0	,,	,,	Land and S. E.	Clear and cloudy—lightning.
5	29,840	29.900	29,908	29 852	29,825	29 835	87 0	93.3	98,0	97 7	91,5	86,0	,,	,,	Land and S. E.	Mostly clear.
6	29 860	29 900	29,902	29 855	29,820	29,840	86,0	91,0	95,5	97,5	88,0	85.5	,,	,,	Fresh land.	Cloudy—lightning—a rainbow.
7	29 850	29 900	29 880	29 855	29,824	29,855	85.0	88 5	94,5	94,0	88 0	86,5	,,	,,	Calm and land.	Cloudy—misty.
8	29,860	29.928	29.920	29 875	29.825	29,885	84,0	88,2	96.0	94,5	89,0	87,4	,,	,,	Calm and land.	Cloudy—some rain.
9	29 888	29.900	29,888	29 930	29,784	29,835	86,0	91,0	95,5	96,2	89,7	88,0	,,	,,	Land and S. E.	Cloudy, lightning with thunder
10	29.855	29 888	29 880	29.822	29,878	29,835	85,0	90,0	92,5	95,0	87.0	86,5	,,	,,	Land and S. E.	Mostly hazy.
11	29 870	29 910	29,910	29 865	29,788	29,820	84,4	90,5	93.4	96,0	89.0	87,0	0,5	,,	Land and S. E.	Cloudy—some rain.
12	29 900	29,928	29,920	29,865	29,835	29.830	86,5	98 0	95.8	97,8	91,5	86,0	,,	,,	Land and S. E.	Cloudy—clear.
13	29,900	29 940	29,965	29.945	29.900	29,900	82,5	92,0	96 2	98.5	89,8	87 0	,,	,,	Land and S. E.	Cloudy—hazy.
14	29,940	29,955	29.935	29,908	29,900	29,915	86,2	93.0	97,7	96,0	91,0	86,5	,,	,,	Variable.	Mostly clear.
15	29,940	29 965	29.988	29.935	29,915	29,940	85,5	91,8	92.2	91.5	90,0	85,0	,,	,,	Land and S. E.	Mostly clear.
16	29.935	29,955	29,930	29,915	29,900	29,915	83,0	93,3	98,4	93 5	91,0	85,0	,,	,,	Land and S. E.	Hazy and clear.
17	29,910	29 928	29,905	29,900	29,900	29,910	85,0	95 0	92,5	92,0	90,0	85,0	,,	,,	Variable.	Cloudy and lightning.
18	29 915	29,975	29 988	29.930	29,900	29 910	84 5	87,5	91.5	89 8	87,0	85,0	,,	,,	Variable.	Cloudy and hazy.
19	29 915	29 968	29,945	29 925	29,928	29.888	84,0	82.0	92,2	93 0	90,0	88,0	,,	,,	N. W. and S. E.	Cloudy—lightning.
20	29,865	29,840	29,930	29,908	29,865	29.868	84,0	86,0	87 0	88.0	86,0	85 5	,,	,,	Land and S. E.	Flying clouds.
21	29 900	29,905	29,916	29,900	29,864	29 900	85 0	89,4	93.5	91 5	87,2	85,5	,,	,,	Land and S E.	Cloudy.
22	29,920	29,955	29,968	29 915	29,900	29 908	83.5	91,0	93 5	91,0	87,0	86,0	,,	,,	Land and S E.	Mostly clear.
23	29,920	29,955	29,915	29,902	29,900	29,915	84,0	88,8	90,0	91,0	88,2	86,0	,,	,,	Variable.	Clear.
24	29.920	29,955	29.950	29.928	29.900	29,925	85,0	90.0	91,5	91,2	88.0	87,0	,,	,,	S. E.	Clear—distant lightning.
25	29 920	29,945	29.915	29 900	29,888	29 910	86.0	90,0	92,2	92,0	90,2	85,5	,,	,,	S. E.	Clear—cloudy.
26	29 900	29.915	29,920	29.888	29.888	29,898	84,2	93,3	97,2	95,5	91,0	90,0	,,	,,	Land and S. E.	Hazy—clear.
27	29 900	29,886	29,915	29 872	29,848	29,848	85,0	87,8	93,0	92.4	89,0	87 8	,,	,,	Calm and S. E.	Clear—cloudy.
28	29,900	29.905	29,900	29 877	29 850	29.875	85,0	94,2	91,0	93,0	90.5	87.0	,,	,,	Variable.	Clear—cloudy.
29	29,888	29,886	29,910	29.888	29,855	29,900	85 0	90,4	92,0	91,6	90,0	87,0	,,	,,	S. E.	Mostly clear.
30	29,920	29,928	29,920	29 900	29.866	29,858	86,0	89,0	90,3	89,8	88,0	86,0	,,	,,	S. E.	Clear—distant lightning.

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height....	29.988	100,0
Least Height.......	29.784	82,0
Mean.............	29,886	91,0
Extreme Difference.	00,204	18,0

	Rain. Inches.
Observed......	0,5
Reduced	0,1¼

PHASES OF THE MOON.

	D.	H. M.
First Quarter.....................	1	9 28 M.
Full Moon.........................	8	1 51 A.
Last Quarter......................	15	3 55 M.
New Moon...	22	8 22 A.
First Quarter..................	30	11 49 A.

In this Month

The nearest approach of the Moon to the Earth was on the 9th.
The Moon had receded to the greatest distance on the 24th.

July 1819.

Days.	Barometer.						Thermometer (*exposed to a free current of air.*)						Rain Gauge		Hygrometer.												Winds.	Weather, &c.
	Sun-rise.	10 *o'clock.*	*Noon.*	2 *o'clock*	*Sun-set.*	9 *o'clock.*	*Sun rise.*	10 *o'clock*	*Noon.*	2 *o'clock*	*Sun set.*	9 *o'clock*	*From Sun rise to Sun set.*	*From Sun set to Sun rise.*	*Sun rise.*		10 *o'clock*		*Noon.*		2 *o'clock.*		*Sun set.*		9 *o'clock*			
															Dry.	Moist.	Dry.	Moist.	Dry.	Moist.	Dry.	Moist.	Dry.	Moist.	Dry.	Moist.		
	inches	inches	inches	inches	inches	inches	deg	deg	deg	deg	deg	deg	inches	inches	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.		
1	29,855	29,868	29,845	29,835	29,800	29,818	85,0	93.5	96.2	94,0	91,2	89.2	,,	,,	..	6	..	10	..	12	....	13	....	10	...	12	S. E.	Clear.
2	29,815	29,860	29,860	29,825	29,788	29,785	81,8	86,5	88,2	90,5	88,5	86,6	,,	,,	..	6	..	3	..	8	....	9	...	8	....	9	Variable	Cloudy—some rain.
3	29,800	29.850	29,855	29,830	29.800	29 860	83,0	88,0	88,8	87,2	86,0	85,8	0,5	,,	..	5	..	5	..	5	...	4	....	4	....	4	S. E.	Cloudy—some rain.
4	29 800	29,880	29.888	29.855	29,785	29,800	82,0	79,0	81,0	82,5	82.4	81.0	0,5	,,	..	2	..	1	..	8	....	7	..	1	...	2	S. W.	Cloudy—rain.
5	29,800	29.788	29,816	29,788	29,785	29,755	79,2	79,0	81,6	82,0	81,0	80,0	,,	0,4	..	0	..	2	..	1	...	2	....	0	....	2	Variable	Cloudy—some rain.
6	29.770	29.774	29,770	29,755	29.730	29.755	79.8	82,5	86,5	82,2	79,0	81,0	0,2	1,0	..	0	..	1	.	0	....	11	....	7	....	0	Land	Cloudy—rain.
7	29.760	29,800	29.800	29,800	29 775	29 800	79,0	84,0	88,5	89,5	80,2	80,0	1,5	0,5	..	2	..	2	..	2	....	6	....	1	....	2	S. W.	Hazy—some rain.
8	29.835	29,860	29,870	29,835	29.800	29,815	80,2	84.4	87 5	91,5	89,0	86,0	0,5	,,	..	3	..	2	..	4	....	11	.	9	....	0	Variable	Hazy—some rain.
9	29.850	29,880	29.855	29,840	29 800	29,805	84,0	86,0	88,8	89,8	85,0	84.5	0,2	,,	..	1	..	3	..	6	....	9	....	8	....	3	Variable	Mostly cloudy.
10	29 850	29,875	29.870	29 855	29 840	29 835	80,0	82,0	83,5	84.4	83.4	83,0	3,4	,,	..	0	..	1	..	1	....	1	....	2	....	1	Calm	Cloudy—rain.
11	29,835	29,848	29,880	29 820	29.800	29.830	80,0	84,0	87,0	86.5	87,0	85,0	,,	,,	..	1	..	2	..	5	....	5	....	4	....	1	S. W.	Hazy—rain.
12	29.850	29,848	29.840	29.834	29,840	29.835	82,0	83,5	89.0	88,5	85,0	83,5	3,0	,,	..	1	..	1	..	6	....	6	....	5	....	2	Variable	Cloudy.
13	29.860	29,900	29,915	29,866	29.850	29 900	82,0	87,0	88,8	90,6	88,4	85,6	1,0	,,	..	1	..	4	.	6	...	8	....	8	...	6	S. W.	Mostly cloudy.
14	29.900	29,884	29,883	29,827	29,800	29.788	81,0	85,4	91,0	91,4	91,0	84,0	,,	,,	..	5	..	7	..	13	...	15	....	16	....	10	Land	Mostly cloudy—rain.
15	29,885	29,900	29,875	29.795	29.800	29,788	84,8	85,0	89,2	89,9	89,0	88,0	0,5	,,	..	9	..	8	..	10	....	12	....	15	....	14	Land	Mostlycloudy—some rain.
16	29,800	29.850	29,820	29,800	29 800	29.830	85,0	86 0	89,2	92,2	86,5	83,4	,,	,,	..	12	..	11	..	13	....	15	....	14	....	13	Land	Mostly hazy.
17	29,840	29,865	29.855	29,825	29,800	29.850	83,0	87,0	92,0	94,0	92,0	89,0	,,	,,	..	12	..	13	..	15	....	17	....	19	....	19	Land	Hazy.
18	29,900	29.935	29 900	29,858	29.818	29,859	85,0	86,5	95,0	95,0	93,0	91.0	,,	,,	..	20	..	21	..	23	....	24	....	23	....	20	N W.	Clear.
19	29.900	29,945	29,915	29,855	29,840	29.855	85,0	89,0	93,0	97,0	91,0	90,0	,,	,,	..	15	..	19	.	19	....	22	....	20	....	18	Land	Mostly clear.
20	29,850	29,900	29.845	29.815	29,784	29,788	86,0	89,0	92,5	96,0	88,4	85,0	,,	,,	..	16	..	17	..	19	....	22	....	15	....	12	Land	Hazy.
21	29,800	29.850	29.825	29 768	29.800	29 800	86.0	86 2	88,2	90,4	87,0	84,5	,,	,,	..	14	..	14	..	15	....	16	....	13	....	12	N. W.	Mostly cloudy.
22	29,800	29,875	29 805	29,825	29.800	29.800	80,0	81.0	84,0	86,0	86,0	84,8	,,	,,	..	10	..	6	..	5	....	7	....	7	....	6	N. W.	Cloudy.
23	29,850	29.900	29.888	29,868	29 815	29.848	81,2	86,0	89,8	90,2	87,0	86,0	,,	,,	..	5	..	3	..	10	....	15	....	11	....	9	Land	Hazy.
24	29,888	29,900	29.885	29.855	29.800	29,825	85,0	87,0	91,5	93,0	87,5	86,0	,,	,,	..	10	..	5	..	14	....	13	....	10	....	9	Variable	Hazy.
25	29,778	29 825	29.900	29 878	29,855	29.888	83,0	86,0	89,5	91,0	87,0	86,0	,,	,,	..	4	..	9	..	11	....	15	....	14	....	1	Variable	Cloudy.
26	29,888	29 908	29.888	29,855	29,825	29,900	84.5	88,0	91,2	93.4	87,0	85,0	,,	,,	..	5	..	8	..	12	..	13	...	11	....	9	N. W.	Clear—hazy.
27	29,865	29.900	29.900	29,885	29.815	29 840	83,5	88,0	92,0	94,4	87,0	86,6	,,	,,	..	7	..	10	..	14	....	16	....	10	....	7	N. W.	Hazy.
28	29,805	29.900	29.900	29,885	29,800	29.825	84,0	88,0	92,0	89,8	87.0	85.5	,,	,,	..	6	..	10	..	15	....	12	....	10	....	7	Land	Hazy.
29	29.855	29,9 0	29.888	29.840	29,815	29,875	84,0	89,0	92,2	91,5	89,0	87,0	,,	,,	..	6	..	10	..	13	....	14	....	12	...	10	S. E.	Mostly clear.
30	29,880	29,908	29.900	29,888	29 840	29,860	85,0	89,8	94,0	95,0	88,8	87.0	,,	,,	..	7	..	18	..	13	....	14	....	12	....	10	Calm	Clear.
31	29.880	29.900	29,855	29,818	29.820	29.900	85,4	88,8	90,0	89,0	88,0	83,0	,,	,,	..	8	..	7	..	11	....	10	....	9	....	7	S. E.	Clear—some rain at night

	Barometer Inches.	Thermometer Degrees.	Rain. Inches.
Greatest Height... ...	29,915	97,0	Observed....13,2
Least Height..........	29,730	79,0	Reduced.... 3,2
Mean................	29,8375	88,0	
Extreme Difference....	00,215	18,0	

Greatest Height	24,0	23
Least	1	1
Mean	12,5	12
Extreme Difference.....	23,0	22,0

PHASES OF THE MOON.

	D.	H.	M.
Full Moon..................	7	8	41 A.
Last Quarter...............	14	0	14 A.
New Moon	22	11	8 M.
First Quarter..............	30	11	29 M

In this Month

The nearest approach of the Moon to the Earth was on the 7th.

The Moon had receded to the greatest distance on the 22d.

August 1819.

Days.	BAROMETER.						THERMOMETER (exposed to a free current of air.)						RAIN GAUGE		HYGROMETER.												WINDS.	WEATHER, &c.
	Sun rise.	10 o'clock.	Noon.	2 o'clock.	Sun set.	9 o'clock.	Sun rise.	10 o'clock.	Noon.	2 o'clock.	Sun set	9 o'clock.	From Sun-rise to Sun-set.	From Sun-set to Sun-rise	Sun rise.		10 o'clock		Noon.		2 o'clock.		Sun set.		9 o'clock.			
															Dry.	Moist.	Dry.	Moist.	Dry.	Moist.	Dry.	Moist.	Dry.	Moist.	Dry.	Moist.		
	inches	inches	inches	inches	inches	inches	deg	deg	deg	deg	deg	deg	inches	inches	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.		
1	29,855	29,900	29,900	29,888	29,825	29,840	82,0	86.0	87,0	87.4	86,0	84.5	,,	,,	5	..	7	..	6	..	5	..	4	..	6	..	S. Easterly	Hazy—clear.
2	29,825	29,842	29,830	29,800	29,815	29,835	83.0	82,0	90,0	89,0	87,0	85,5	,,	,,	7	..	5	..	12	.	7	..	7	..	6	..	Variable	Clear—hazy.
3	29,800	29 845	29,820	29,820	29,788	29,755	82,0	84,0	89,2	86,0	86,0	85,0	0,4	,,	6	..	5	..	7	..	5	..	4	..	3	..	Variable	Mostly hazy.
4	29,835	29,865	29,825	29,810	29.800	29,840	83,0	86,0	87,0	86,0	83,0	83,0	,,	,,	5	..	7	..	6	..	4	..	3	..	3	..	Land	Cloudy.
5	29,808	29,900	29,880	......	29,825	29,880	83,0	85,0	84.8	....	84.8	83,0	,,	,,	8	.	10	..	8	.	0	..	5	..	3	..	Land	Hazy.
6	29,885	29 920	29,900	29,835	29,815	29,828	82,5	86,0	91,6	91,4	84.6	84.0	,,	,,	1	..	6	..	10	..	8	..	6	..	5	..	Land	Cloudy—some rain.
7	29,810	29,855	29,884	29,805	29,788	29,800	81.8	85,6	89,8	85,6	87,0	85,2	0,3	0,2	4	.	6	..	8	..	7	..	5	..	4	..	Land	Cloudy—some rain.
8	29,815	29,855	29.840	29,840	29,765	29,800	82,0	87,0	90,0	82,8	86,0	86,0	1,4	,,	2	..	5	..	9	..	10	..	6	..	5	..	Land	Cloudy.
9	29,835	29,900	29,888	29,854	29,850	29,888	83,0	86,0	88 5	88.0	87,0	85,0	,,	,,	4	..	6	.	7	..	6	..	5	..	5	..	S. E.	Mostly clear.
10	29,880	29,900	29,875	29,845	29,800	29,855	83,0	86,6	87,7	88,0	87,0	85,5	,,	,,	4	..	5	..	6	..	10	..	6	..	5	..	S. E.	Clear.
11	2 835	29,900	29,818	29,800	29.788	29,800	83,0	86,0	91,2	92,0	91,0	88,0	,,	,,	4	..	6	..	8	.	10	..	7	..	10	..	S. E.	Hazy.
12	29,820	29,900	29,885	29.877	29,818	29,845	81,0	85,5	87.5	86,0	85,5	85,0	,,	,,	7	.	7	..	9	..	8	..	6	..	5	..	S. W. or land	Cloudy.
13	29,840	29,920	29,848	29,842	29,800	29.8[illegible]8	82,0	86,0	89 0	88,0	85.5	85.0	,,	,,	8	..	10	..	11	..	10	..	8	..	7	..	S. W.	Hazy.
14	29,855	29,900	29,888	29,805	29,775	29,800	81,0	86.8	89,8	91,8	86,5	85,0	,,	,,	5	..	7	..	8	..	6	..	9	..	10	.	S W.	Cloudy—lightning.
15	29,810	29,872	29,850	29,810	29,788	29.788	81,0	81,5	82,8	83,0	80.0	82.2	,,	,,	4	..	4	..	4	..	4	.	3	..	3	..	S. E.	Cloudy—some rain.
16	29,800	29,845	29,818	29,800	29,815	29,825	81,0	83,0	88.3	89,0	86,0	85,0	,,	,,	4	..	5	..	7	..	8	..	7	..	6	..	N. W.	Cloudy—some rain.
17	29,800	29,845	29,800	29,875	29,788	29,800	81,0	84,0	89,8	88,0	82,0	81,5	,,	,,	7	..	8	..	10	..	9	..	9	..	8	..	Land	Cloudy.
18	29,850	29,900	29,855	29,794	29,880	29,885	80,0	84,0	85 0	88.6	86,0	86,0	1,5	,,	6	..	6	..	10	..	9	..	8	..	10	..	Variable	Cloudy.
19	29,840	29,885	29,868	29,825	29,800	29,808	84,0	85,5	88.2	89,0	88.5	83,0	,,	,,	8	..	8	.	10	..	9	..	10	..	9	..	Land	Cloudy.
20	29,845	29,900	29,900	29,835	29 825	29,880	82,5	84,0	87,7	89,0	88,0	87,5	1,8	,,	9	..	7	..	10	..	11	..	10	..	12	..	Variable	Cloudy.
21	29,875	29,950	29,930	29,888	29,848	29.888	83,0	85,0	88,2	89,8	87,8	87,0	,,	,,	11	..	11	..	12	..	13	.	12	..	12	..	Land	Hazy.
22	29,900	29,942	29,944	29,818	29,800	29.815	84,0	87,0	89,2	91,0	90,0	86,5	,,	,,	11	..	12	..	13	..	14	..	14	..	15	..	S. W.	Hazy.
23	29,880	29,950	29.900	29,880	29,820	29,855	85,0	86,0	90.0	91.2	88,0	85,5	,,	,,	10	..	12	..	13	..	14	..	13	..	12	..	S. W.	Mostly hazy.
24	29,900	29,935	29,950	29,888	29,858	29,900	84,2	85,5	88.5	90,5	86,0	87,0	,,	,,	10	.	11	..	14	..	15	..	14	..	14	..	Land	Mostly hazy.
25	29,900	29,940	29,955	29,900	29,915	29,920	83,5	86,0	92,0	94,0	90,5	86,8	,,	,,	14	..	15	..	16	..	18	..	17	..	12	..	Land	Flying clouds.
26	29,928	29,988	29,980	29,930	29,900	29.918	88,8	88,9	91,5	95,2	89,8	88,0	,,	,,	12	..	14	..	15	..	17	..	15	..	15	..	S. W.	Clear—hazy.
27	29.950	29,998	30,000	29,988	29.950	29.966	85,5	88,5	92,2	92,0	93,0	88.8	,,	,,	14	..	15	..	16	..	16	..	16	..	14	.	Land and S. E.	Clear—hazy.
28	29,955	30,008	29,978	29,918	29,930	29.925	83,8	87,5	93,0	96.5	95,0	88.0	,,	,,	15	..	16	..	19	..	22	..	18	..	16	..	Ld N.W. & S.E.	Clear—flying clouds.
29	29 925	29,955	29,930	......	29,888	29 900	84,0	89,0	93.4	90,0	90,0	89,8	,,	,,	14	..	18	..	19	..	0	..	19	..	18	..	Land	Clear—hazy.
30	29,900	29,955	29.940	29,878	29,890	29,980	83,0	86,5	84,0	89,0	88,0	87,0	,,	,,	15	..	16	..	18	..	11	..	19	..	15	..	Calm	Cloudy.
31	29.940	29,987	29,960	29,900	29,900	29.915	84,0	87,0	90,8	93,5	88,0	85,0	,,	,,	15	..	15	..	17	.	19	..	16	..	11	.	Land	Cloudy—some rain.

	Barometer.	Thermometer.
	Inches.	Degrees.
Greatest Height....	29,998	96,5
Least Height.......	29,755	80,0
Mean....	29,8765	88,25
Extreme Difference.	00,243	16,5

Rain.

Inches.

Observed....4,2

Reduced....1,5

Greatest Height....	22,0	,,
Least...............	1,0	,,
Mean...............	11,5	,,
Extreme Difference.	21,0	,,

PHASES OF THE MOON.

	D.	H.	M.	
Full Moon...............	6	3	18	M.
Last Quarter............	12	11	34	A.
New Moon	21	2	34	M.
First Quarter...........	28	8	48	A.

In this Month

The nearest approach of the Moon to the earth was on the 5th.

The Moon had receded to the greatest distance on the 13th.

September 1819.

Days.	BAROMETER.						THERMOMETER. (*exposed to a free current of air.*)						RAIN GAUGE		HYGROMETER.												WINDS.	WEATHER, &c.
	Sun rise.	*10 o'clock*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*Sun rise.*	*10 o'clock.*	*Noon.*	*2 o'clock*	*Sun set*	*9 o'clock.*	*From Sun-rise to Sun-set,*	*From Sun-set to Sun-rise,*	*Sun-rise.*		*10o'clock*		*Noon.*		*2 o'clock*		*Sun-set.*		*9 o'clock*			
															Dry.	Moist.	Dry.	Moist.	Dry.	Moist.	Dry.	Moist.	Dry.	Moist.	Dry.	Moist.		
	inches	inches	inches	inches	inches	inches	deg	deg	deg	deg	deg	deg	i ches	inches	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.		
1	29,905	29,988	29,955	29,868	29.880	29,865	83,0	87,0	91,0	93,0	79,0	81,2	0,2	3,0	10	..	11	..	13	..	15	..	7	..	10	..	Land	Cloudy—some rain.
2	29.830	29,936	29,900	29,838	29,805	29,855	79,0	84,5	88,0	91,0	88,0	86,6	0,0	0	6	..	5	..	10	..	10	..	10	..	8	..	Land	Mostly clear.
3	29.855	29,925	29.885	......	29,800	29,830	85,0	85,0	87,0	....	86,0	83.0	,,	0,7	12	..	7	..	10	..	0	..	9	..	8	..	Land & N. E.	Cloudy.
4	29,844	29,888	29,878	29,818	29,825	29,864	80,4	84,8	88,4	89,0	83,0	81,0	,,	,,	7	..	8	..	10	..	10	..	8	..	6	..	Land & S. E.	Flying clouds and rain.
5	......	29,906	29,900	......	29,800	29,818	....	84,0	87,5	....	85,0	81,2	,,	,,	0	..	10	..	12	..	0	..	7	..	7	..	Land	Mostly hazy.
6	29,840	29.900	29,868	29,800	29,788	29,850	83,0	85,0	89,2	88,0	85,0	83,0	0,5	,,	6	..	10	..	11	..	12	..	9	..	9	..	Land	Cloudy—some rain.
7	29,815	29.860	29,855	29,800	29,840	29,808	82,0	86,0	88,4	89,0	84,5	83,0	,,	,,	6	..	10	..	10	..	12	..	11	..	8	..	Land	Cloudy, distant lightning
8	29,810	29,875	29,868	29,800	29,810	29,815	81,0	85,0	89,4	90,4	88,5	85,0	,,	,,	7	..	9	..	11	..	13	..	12	..	10	..	Land	Hazy—distant lightning.
9	29,860	29,900	29,880	29,855	29,838	29,855	84,0	86,0	90,2	85,5	83,0	83,8	,,	7,0	8	..	9	..	11	..	13	..	10	..	11	..	Land	Cloudy.
10	29,838	29,920	29,900	29,855	29,865	29,855	83,0	86,0	89,4	92,0	81,5	82,0	,,	4,0	10	..	11	..	12	..	12	..	11	..	10	..	Land	Cloudy.
11	29,855	29,920	29.913	29,850	29,860	29,868	82,0	86,0	87,0	91,0	77,0	76,5	,,	,,	9	..	10	..	9	..	10	..	6	..	6	..	S. W.	Hazy.
12	29,900	29,968	29,945	29,914	29,855	29,900	81,0	84,0	88,0	89,0	85,2	84,0	,,	,,	8	..	10	..	11	..	8	..	9	..	5	..	Variable	Hazy.
13	29,985	30,000	30,000	29.966	29,900	29,940	82,5	85,2	88,4	88,6	86,6	86,0	1,4	,,	8	..	5	..	4	..	6	..	6	..	5	..	N. E.	Hazy—some rain.
14	30,000	30,026	30,030	29,988	29,955	29,965	79,0	80,0	82.8	84,0	84,0	81,8	,,	,,	5	..	5	..	5	..	7	..	6	..	5	..	Variable	Mostly hazy.
15	29,998	30,008	30,000	29,955	29,950	29,965	80,0	85,0	86,0	83,5	82,0	81,6	,,	,,	4	..	4	..	5	..	3	..	3	..	3	..	N. W.	Mostly hazy.
16	29,988	30,000	29,985	......	29,988	29,958	83,0	86,0	88,8	....	85.5	83,5	,,	,,	4	..	6	..	7	..	0	..	6	..	5	..	Variable	Clear.
17	29,955	30,010	29,985	29,980	29,900	29,940	82,0	85,5	87,0	86,8	84,0	84,9	,,	,,	4	..	5	..	6	..	6	..	5	..	6	..	Land	Cloudy—lightning.
18	29,920	29,978	29 940	29,936	29.888	29,900	82,0	82,4	85,5	85,0	85,5	85,0	,,	,,	5	..	7	..	6	..	4	..	4	..	4	..	Variable	Cloudy.
19	29,920	29,980	29.980	29,854	29,865	29.885	79,0	84,0	87,0	87,0	85,0	84,5	,,	,,	4	..	4	..	5	..	4	..	4	..	4	..	Variable	Clear—distant lightning
20	29,870	29,920	29,910	......	29.828	29.900	83,6	85,5	88,0	....	85,5	85,0	,,	,,	4	..	5	..	6	..	0	..	6	..	5	..	Variable	Clear.
21	29,880	29.900	29,900	29,880	29.825	29,850	83,0	86,0	88,2	87,0	84,0	84,0	,,	2,8	4	..	4	..	4	..	3	..	3	..	3	..	Variable	Hazy—cloudy.
22	29 855	29 900	29,888	29,795	29.770	29,770	82,0	84,0	86,0	89,0	85,0	83,0	,,	,,	3	..	4	..	4	..	6	..	4	..	3	..	Variable	Cloudy—some rain.
23	29,820	29,910	29 900	......	29,818	29,900	80,0	81,2	82,5	....	82,5	83,0	,,	,,	2	..	3	..	2	..	0	..	2	..	3	..	Land	Cloudy.
24	29 880	29 918	29 900	29,870	29,888	29,865	80,0	82,8	84,5	87,6	82,0	83,0	,,	,,	3	..	3	..	4	..	4	..	4	..	3	..	S. W.	Cloudy.
25	29.888	29 915	29.885	29,845	29,835	29.850	82,0	84,6	88,0	91,0	86,0	87,0	,,	,,	4	..	6	..	9	..	9	..	10	..	6	..	Variable	Mostly hazy.
26	29.900	29,935	29,930	29,878	29.835	29.855	82.5	86,0	87.5	88,8	88,0	87,8	,,	,,	6	..	9	..	10	..	10	..	9	..	9	..	Land	Hazy.
27	29.910	29,925	29,900	29.872	29,868	29,878	84.0	87.7	90,0	91.2	87.0	86,0	,,	,,	6	..	8	..	10	..	11	..	10	..	9	..	Variable	Mostly clear.
28	29.900	29,950	29.925	29,855	29,870	29,838	81,8	85,0	87,2	88,2	86.0	83,0	,,	,,	6	..	5	..	5	..	6	..	6	..	5	..	Variable	Mostly hazy.
29	29,910	29,955	29 920	29,888	29,867	29,880	83,0	85,9	89.8	90,0	86,0	85,0	,,	,,	5	..	6	..	6	..	10	..	6	..	5	..	S. E.	Clear.
30	30,000	29 988	29.955	29,884	29.900	29.915	80,0	83.0	87.2	90,2	86.0	83,0	4,0	,,	5	..	5	..	8	..	8	..	8	..	7	..	Variable	Mostly clear.

	Barometer.	Thermometer.
	Inches.	Degrees.
Greatest Height....	30,030	93,0
Least Height.......	29,770	76,5
Mean	29.900	84,75
Extreme Difference.	00,260	16,5

Rain.

Inches.

Observed....23,6

Reduced.... 5,9

Greatest Height.......	15,0	,,
Least..................	20	,,
Mean................	85	,,
Extreme Difference...	13,0	,,

PHASES OF THE MOON.

	D.	H.	M.
Full Moon............	4	11	1 M.
Last Quarter...........	11	2	19 A.
New Moon.............	19	6	13 A.
First Quarter..........	27	4	24 M.

In this Month

The nearest approach of the Moon to the Earth was on the 2d.

The Moon had receded to the greatest distance on the 15th.

October 1819.

Days.	BAROMETER.						THERMOMETER. (*exposed to a free current of air.*)						RAIN GAUGE.		HYGROMETER.										WINDS.	WEATHER, &c.
	Sun rise.	*10 o'clock.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*Sun rise.*	*10 o'clock.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*From Sun-rise to Sun-set.*	*From Sun-set to Sun-rise.*	*Sun-rise.*	*10 o'clock*	*Noon.*		*2 o'clock.*		*Sun set.*		*9 o'clock.*			
															Dry.	Dry.	Dry.	Damp.	Dry.	Damp.	Dry.	Damp.				
	inches.	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	deg.	inch.	inch.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.		
1	29,925	29,074	29,955	29,960	29,888	29,928	80,8	86,0	88.5	88,0	87,0	84,4	0	0	5	4	5	0	5	0	5	0	5	0	Variable.	Hazy.
2	29,900	29.925	29.888	29,818	29,810	29,850	84,0	85,5	88,2	90,5	87,0	84,5	0	0	4	3	4	0	6	0	6	0	5	0	Land.	Flying clouds.
3	29,925	29,910	29,900	29,880	29,855	29,875	84,0	86,0	88,8	90,0	83 5	82,0	0	0	5	5	6	0	6	0	5	0	5	0	S. W. or land.	Mostly hazy.
4	29,900	29,918	29,905	29,868	29,845	29,910	83,0	85,0	94,0	91,0	87,0	85.0	0	0	3	5	5	0	6	0	6	0	4	0	S. W.	Hazy.
5	29,915	29,954	29,950	29,960	29,880	29,920	84,0	86,5	89,8	89,8	86,0	84,5	0	0	4	5	6	0	6	0	6	0	5	0	Calm.	Hazy.
6	29,950	29,956	29,950	29,981	29,856	29,900	83,5	86,0	89 5	89,0	86,5	85,0	0	0	6	6	7	0	7	0	7	0	8	0	S W.	Clear.
7	29,910	29,950	29,940	29,900	29,855	29,948	84,5	87,0	89,5	89.0	87,0	86,0	0	0	7	8	8	0	8	0	7	0	6	0	Variable.	Clear.
8	29,940	30,000	29,998	29,918	29,955	22,985	83,5	87,0	90,0	88.0	86,0	86,0	0	0	5	6	8	0	8	0	7	0	7	0	S. E.	Hazy—lightning.
9	29,955	29 975	29,970	29,915	29,900	29,925	84,5	87,0	90,5	87,0	85,0	84,0	2 0	2,0	6	7	8	0	7	0	6	0	4	0	S. W.	Clear—rain.
10	29,925	30,600	29,988	29,945	29,920	29,950	83,0	86,0	87,7	89,0	87,0	85,8	0	0	4	5	5	0	6	0	6	0	7	0	Variable.	Hazy—lightning.
11	29,955	29,998	29,988	29,908	29,868	29,920	82,5	83,2	88,0	90,2	88,0	84,5	0	0	7	6	9	0	10	0	6	0	7	0	Variable.	Clear hazy.
12	29,915	29,953	29,935	29,846	29,855	29,900	80,0	83,5	88,0	88,0	85,0	84,0	0	0	6	7	8	0	8	0	7	0	7	0	Variable.	Mostly hazy.
13	29,900	29,940	29,918	29,888	29,900	29,925	81,0	86,0	89,4	88,8	86 0	85,5	0	0	7	9	10	0	10	0	9	0	8	0	N. E.	Hazy.
14	29.915	29,950	29,995	29,878	29,885	29,900	84,5	86,5	92,0	92.5	88,8	86,8	0	0	7	7	13	0	18	0	18	0	17	0	N. W.	Hazy.
15	29,910	29,938	29,889	29,784	29,835	29,870	85,5	86 5	91,5	92,7	88,5	85,0	0	0	15	18	19	0	22	0	25	0	22	0	Fresh N. W.	Cloudy.
16	29,880	29,934	29,900	29,825	29,820	29,878	75,5	76,0	80,0	85,0	82,2	81,0	0	2,4	18	10	9	0	10	0	11	0	11	0	N. W.	Cloudy—rain.
17	29,900	29,925	29,910	29,866	29,845	29,910	80,0	86,0	90,0	92,0	87,0	86.5	0	0	10	6	16	0	18	0	20	0	15	0	Variable.	Clear.
18	29,900	29,944	29,908	29,832	29,845	29,900	82,0	86,0	89,2	92,0	87,0	85.0	0	0	14	10	13	0	19	0	10	0	10	0	Calm.	Clear.
19	29,940	29,958	29,950	29,888	29,900	29,915	84,0	87,6	90.5	90 0	88,8	84,6	0	0	15	16	18	0	14	0	13	0	6	0	S. E.	Clear.
20	29,920	29,982	30,000	29,928	29,900	30,005	84,0	84,4	88,0	88,8	85,5	82.5	0	0	10	3	5	0	5	0	6	0	5	0	Variable.	Hazy.
21	30,000	30,055	30,030	30,000	30,000	30,040	81,8	85,5	88,8	89,0	87.0	85,0	0	0	6	6	7	0	9	0	9	0	9	0	S E.	Clear—lightning.
22	30,025	30,070	30,075	30,000	29,965	30,005	81,5	83.5	85,0	86,5	84 6	83,6	0	0	8	5	6	0	6	0	7	0	7	0	S. E.	Hazy.
23	30,000	30,055	30,018	29,955	29,914	29.975	78,8	82,0	86.5	86,8	83,8	83,5	0	0	5	4	5	0	6	0	6	0	6	0	S. E.	Hazy—some rain.
24	30,015	30,055	30,055	29,968	29,950	29,978	82,0	86,0	86 8	88,8	86,0	86,8	0	0	5	6	6	0	8	0	7	0	7	0	S. E.	Clear.
25	30,017	30,045	30,040	30,004	30,000	30,045	79 8	85,5	87,5	87,0	86,0	85,2	0	0	7	8	8	0	7	0	7	0	9	0	S. E.	Clear.
26	30,000	30,068	30,065	30,020	30,000	30.020	77,8	82,7	85,5	85,5	83,0	83 0	0	0	8	6	6	0	6	0	7	0	6	0	S. E.	Cloudy—thunder.
27	30.005	30.070	30,060	30,000	29,955	30,000	79 0	83,0	86,0	86,0	83 8	83,0	0	0	6	6	9	0	9	0	12	0	11	0	N. E.	Hazy.
28	29 980	30,018	30,020	30,000	29,965	30,015	77,0	83,0	86,4	86 2	84 0	82,0	0	0	10	10	12	0	13	0	15	0	13	0	N E.	Hazy.
29	29,968	30,010	30,005	29,965	29,960	30,000	77.0	81,0	84,4	85,5	83,0	82,0	0	0	11	11	10	0	11	0	10	0	10	0	N. E.	Cloudy—rain.
30	29 955	30,020	30,000	29,955	29,950	30,000	74,2	74.0	74,0	75 5	75,0	75.0	0	3,0	7	7	7	0	7	0	6	0	2	0	N W.	Cloudy.
31	29.925	30,000	29,978	29,945	29,930	29,950	80,3	79.2	80.5	77.0	76,0	79.0	G,8	3,0	1	1	0	5	0	6	0	7	0	9	Fresh E.	Cloudy—rain.

	Barometer Inches.	Thermometer. Degrees.
Greatest Height....	30,075	94,0
Least Height......	29.784	74.0
Mean..............	29,9295	84,0
Extreme Difference.	00 291	20 0

	Rain. Inches.
Observed......	12,0
Reduced......	3,0

	Hygrometer. Dry.	Damp.
Greatest Height....	25 0	9
Least	1	5
Mean..............	13,0	7
Extreme Difference.	24,0	4

PHASES OF THE MOON.

	D	H	M.
Full Moon................	3	8	43 A.
Last Quarter..............	11	8	18 M.
New Moon................	19	9	16 M.
First Quarter.............	26	11	15 M.

In this Month

The Moon had receded to the greatest distance on the 12th.
The nearest approach of the Moon to the Earth was on the 27th.

November 1819.

Days.	Barometer.						Thermometer. (*exposed to a free current of air.*)						Rain Gauge.		Hygrometer.											Winds.	Weather, &c.
	Sun rise.	*10 o'clock.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*Sun rise.*	*10. o'clock.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*From Sun-rise to Sun-set.*	*From Sun-set to Sun rise.*	*Sun rise.*		*10 o'clock*	*Noon.*		*2 o'clock.*		*Sun set.*		*9 o'clock.*			
															Dry.	Damp.	Damp.	Dry.	Damp.	Dry.	Damp.	Dry.	Damp.	Dry.	Damp.		
	inches.	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	deg.	inch.	inch.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.		
1	30,000	30,065	30,050	30 000	29,998	30,010	78,0	80,0	82,0	81,2	81,5	80,5	5,0	0,5	0	9	10	0	10	0	9	0	9	0	9	Calm & S. E.	Cloudy—rain.
2	30,000	30,065	30,050	30,000	30,000	30,020	77,0	83,0	84,0	84,5	83.0	80,5	0,6	0	0	9	10	0	9	0	6	0	4	0	5	E.	Cloudy—some rain.
3	30 000	30,045	30,040	30,000	30,000	30,020	78,8	80,5	84,5	84 0	83,0	82,2	0,2	0	0	4	8	0	8	0	5	0	5	0	5	Variable.	Cloudy—some rain.
4	30,020	30,056	30,055	30,006	30,000	30,050	78 0	83,5	84,8	85,6	83,5	82,0	1,2	0	0	5	6	0	6	0	5	0	3	0	1	N. E.	Hazy.
5	30,010	30,050	30 040	30,000	29,978	30,005	78,0	83,0	85,0	84,2	79,0	79,0	0	1,4	0	3	4	0	4	0	3	0	5	0	4	N. E.	Cloudy—some rain.
6	29,920	29,945	29,910	29,845	29,780	......	77,0	81,0	79 5	78,5	78,0	....	1,5	9,0	0	5	6	0	6	0	7	0	10	0	0	Strong N. E.	Cloudy—rain:
7	29,774	29,845	29,825	29,775	29,775	29,810	79,0	80,0	80 5	82,0	80,0	79,0	9,5	1,6	0	12	13	0	14	0	13	0	12	0	12	S. E.	Cloudy—rain.
8	29,788	29,850	29,800	29,775	29,775	......	78,0	79,0	80,0	79,0	79,0	....	5,0	2,0	0	14	14	0	15	0	16	0	16	0	0	S. E.	Cloudy—rain:
9	29,830	29,848	29 860	29 800	29,820	......	76,0	76,0	76,0	78,0	78,0	....	0,5	0,5	0	17	17	0	18	0	18	0	18	0	0	N. W.	Cloudy—rain.
10	29,865	29,955	29,945	29,900	29,868	29,920	75,0	76,7	78,5	80,0	78,4	77,4	3,5	0	0	18	18	0	17	0	16	0	16	0	15	N. E. & N. W.	Cloudy.
11	29,905	29,978	29,955	29,920	29,878	29,965	76 0	78,0	80,0	80,2	79,8	78,2	0	0	0	15	15	0	16	0	15	0	15	0	16	Calm.	Cloudy.
12	29,945	29,978	29,968	29,925	29,900	29,958	77,0	79,0	83,5	85.0	81,5	81,0	0	0	0	15	15	0	17	0	10	0	8	0	9	Calm & N W.	Clear.
13	29.960	30,020	30,012	29,965	29,968	30,000	79,0	81,0	84 5	82,4	79,0	78,0	0	0,4	0	9	10	0	9	0	9	0	9	0	9	Calm & N. W.	Cloudy—rain.
14	30,000	30,050	30,048	29.982	30,000	30,020	77,0	82,0	83,3	85,6	82.0	80,5	0	0	0	8	8	0	7	3	0	2	0	0	0	Calm & N. W.	Clear.
15	30,008	30,045	30,020	29,978	29,965	30,000	78,0	80,5	84,5	85 0	83,5	80,0	0	0	0	2	3	0	2	1	0	1	0	1	0	Calm & S. W.	Hazy.
16	30,005	30,025	30,000	29,932	29,945	29 955	79,2	83,0	86,5	87,0	83,5	83,0	0	0	1	0	1	½	0	2	0	3	0	1	0	Calm.	Clear.
17	29 960	30,040	30,000	29,972	29,960	30,020	78,5	81,5	88,0	85,2	83,0	81,0	0	0	0	3	3	2	0	5	0	3	0	3	0	N. E. & N. W.	Hazy—some rain.
18	30,000	30,100	30,088	30,025	30,020	30,030	77,0	81,2	81,5	82,0	80,5	80,0	1,0	0	0	2	2	0	3	2	0	½	0	1	1	N. W & N. E.	Mostly clear.
19	30,050	30,110	30,100	30,050	30,055	30,085	78,0	82,0	84 2	84,4	83,4	80,5	0	0	3	0	2	0	2	0	1	0	2	0	2	Calm & N. E.	Clear—the dews commencing.
20	30 038	30,120	30,120	30,100	30.050	30,100	78,0	81,5	83,0	83,8	82,0		0	0	0	3	4	0	1	0	2	0	1	0	1	Variable.	Hazy—dew.
21	30,050	30,110	30,100	30,055	30,050	30,065	79,0	78,0	79,5	80,0	79,2	81,0	0	0	0	3	4	0	5	0	7	0	7	0	9	N. E.	Cloudy—rain.
22	30,056	......	30.100	30.055	30,050	30,088	78,8	.....	82,8	84,0	82,0	79,5	0	0	0	6	0	0	10	0	10	0	8	0	7	Calm.	Hazy.
23	30,100	30,136	30,130	30,100	30.100	30,120	77,8	83 5	84,2	84,0	83,0	80,5	0	0	0	6	7	0	7	0	4	0	2	0	2	N. E.	Clear.
24	30,105	30,150	30,145	30,115	30,100	30,140	77,5	83,8	84 5	84 0	83,3	82,0	0	0	0	1	4	0	2	0	2	0	1	0	1	S. E.	Mostly clear—dew at night.
25	30,140	30,175	30,170	30,130	30,100	30,140	79 0	83,0	84,8	85,2	83,3	81,0	0	0	0	2	3	0	2	0	2	2	0	0	0	S E.	Mostly clear—dew. [morning.
26	30,100	30,140	30,125	30,060	30,035	30,080	78,4	82,5	85.0	85,2	83,8	83,0	0	0	2	0	1	3	0	1	0	1	0	2	0	S. E.	Clear—dew on the ground in the
27	30,075	30,135	30,125	30,070	30,050	30 120	77 5	82,6	84,0	84,4	81,2	81,5	0	0	4	0	0	3	0	6	0	6	0	4	0	Variable.	Mostly clear—dew.
28	30,100	30,125	30,105	......	30,100	30,120	78,0	83,0	84,5	.....	81,8	80,0	0	0	5	0	0	7	0	0	0	6	0	6	0	Variable.	Clear—dew in the morning
29	30,105	30,155	30,100	30,105	30.100	30,140	78,8	82,2	83,5	84,0	81,0	81,0	0	0	5	0	0	4	0	4	0	4	0	5	0	Variable.	Mostly clear—dew.
30	30 165	30,200	30.188	30,140	30,120	30.150	77,2	83,0	83,5	84,0	83,0	81.5	0	0	3	0	0	4	0	5	0	5	0	3	0	S. E.	Clear—dew at night.

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height....	30,200	88,0
Least Height......	29,774	75,0
Mean............	29,987	81,5
Extreme Difference..	00,426	13 0

	Rain Inches.
Observed....	43,4
Reduced....	10,85

	Hygrometer. Dry.	Damp.
Greatest Height....	7 0	18,0
Least............	0,5	10
Mean............	3,75	9,5
Extreme Difference.	6,5	17

PHASES OF THE MOON.

	D	H.	M.
Full Moon................	2	8	53 M.
Last Quarter...............	10	4	40 M.
New Moon................	17	11	2 A.
First Quarter..............	24	6	26 A.

In this Month

The Moon had receded to the greatest distance on the 9th.

The nearest approach of the Moon to the Earth was on the 21st:

December 1819.

Days.	Barometer.						Thermometer. (*exposed to a free current of air.*)						Rain Gauge.		Hygrometer.												Winds.	Weather, &c.
	Sun rise.	*10 o'clock.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*Sun rise.*	*10 o'clock.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*From Sun-rise to Sun set.*	*From Sun-set to Sun-rise.*	*Sun-rise.*		*10 o'clock*		*Noon.*		*2 o'clock.*		*Sun-set.*		*9 o'clock.*			
															Dry.	Moist.	Dry.	Damp.	Dry.	Damp.	Dry.	Damp.	Dry.	Damp.	Dry.	Damp.		
	inches.	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	deg.	inch	inch.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.		
1	30,150	30,215	30,210	30,175	30,150	30,200	78,0	83,7	84 5	84,4	82.0	81,5	o	o	4	o	7	o	8	o	8	o	7	o	6	o	N. E.	Mostly cloudy.
2	30,150	30,208	30,205	30,160	30,120	30,180	77,8	83,0	83.3	82,0	82,0	81,5	o	o	6	o	7	o	8	o	9	o	8	o	9	o	N. E.	Clear
3	30,135	30,170	30,140	30,100	30,105	30,110	73 5	80,5	82,0	81,0	81,0	78,5	o	o	7	o	5	o	7	o	8	o	7	o	12	o	N. E.	Clear & hazy—dew
4	30,100	30,130	30,108	30,100	30,075	30,100	76 0	81,0	81,1	80,0	80,0	79.0	o	o	9	o	10	o	8	o	8	o	7	o	12	o	N. E.	Hazy
5	30,100	30,138	30,140	30,100	30,100	30 100	75,0	81,8	82,0	77,7	77,7	78,0	o	o	10	o	8	o	8	o	8	o	5	o	4	o	N. E.	Cloudy—rain
6	30,060	30,124	30,110	33,055	30,050	30,100	77,0	82,7	80,0	77,8	77,8	78 5	0,8	0,5	4	o	0	3	0	5	0	6	0	7	0	8	N. E.	Cloudy—rain
7	30,120	30,135	30,130	30,100	30,100	30,110	77,0	78,0	80,5	80,0	80,0	78,5	15	o	0	7	0	7	0	6	0	5	0	4	0	3	N. E.	Flying clouds
8	30,105	30,165	30,155	30,105	30,100	30,150	77,7	79 8	81,6	80,0	80,0	79,0	o	o	0	4	0	1	0	o	0	o	1	o	2	o	N. E.	Cloudy
9	30,145	30,168	30,150	30,120	30,110	30,140	75,0	81,4	82,8	80 5	80,5	80 0	o	o	2	0	0	1	0	o	1	o	1	o	1	o	N. E.	Hazy—cloudy
10	30,100	30,138	30,130	30,110	30,105	30,130	76,5	80,0	80 5	80 0	80,0	78 5	o	o	0	1	2	o	0	1	0	o	1	o	2	o	N. E.	Cloudy
11	30,100	30,140	30,130	30.100	30,076	30,140	73,5	80,2	81,6	78,8	78,8	78,0	o	o	2	o	3	o	2	o	3	o	5	o	6	o	N. E.	Clear—dew in the morning
12	30,120	30,165	30,106	30,125	30,100	30,130	74,0	80,5	81,8	80,0	80,0	79,0	o	o	4	o	4	o	4	o	5	o	4	o	5	o	N. E.	Clear—dew
13	30,140	30,176	30,170	30,130	30,130	30,160	74,0	80,5	81,0	80,5	80,5	79,0	o	o	4	o	6	o	0	8	0	o	7	o	7	o	N E.	Hazy
14	30,145	30,200	30,160	30,124	30,118	30,120	75,2	81,0	81,5	79,8	79,8	79,0	o	o	6	o	8	o	7	o	7	o	8	o	7	o	N. E.	Clear
15	30,105	30,135	30,128	......	30,100	30,150	74,0	81,0	82,0	80,8	80,8	78,0	o	o	7	o	10	o	9	o	0	o	10	o	9	o	Calm & N. E.	Clear & dew
16	30,056	30,136	30,185	30 065	30,055	30,120	74,0	80,0	81,5	78.5	78,5	77,5	o	o	10	o	8	o	11	o	11	o	13	o	13	o	N. E.	Clear
17	30,105	30,165	30,160	30,125	30,100	30,140	73,3	78,4	80 0	78,5	78,5	78,0	o	o	12	o	10	o	10	o	11	o	13	o	13	o	N. E.	Hazy
18	30,120	30,164	30,140	30,125	30,105	30,100	73 6	79,5	81,0	78,8	78,8	78,5	o	o	14	o	13	o	12	o	14	o	13	o	12	o	N. E.	Hazy
19	30,100	30,140	30,125	30,088	30,086	30,115	73,0	79,2	81.0	79,0	79,0	75 5	o	o	12	o	8	o	13	o	12	o	14	o	13	o	N. E.	Clear
20	30.050	30,125	30,120	30,065	30,100	30,110	75,0	79,5	81,5	81,0	81,0	79,2	o	o	4	o	10	o	10	o	10	o	9	o	10	o	N E.	Mostly clear
21	30,105	30,135	30,120	30.100	30,105	30,120	75,6	80,5	81 5	80,5	80,5	79,0	o	o	10	o	8	o	11	o	12	o	12	o	11	o	N. E.	Clear—hazy
22	30,100	30,145	30,140	30,100	30,100	30.100	73,0	79,5	82,5	80,0	80,0	79 0	o	o	7	o	14	o	10	o	11	o	11	o	11	o	N. E.	Cloudy—hazy
23	30,100	30,125	30,110	30 055	30,048	30,055	74,0	81,0	82,5	79 0	79,0	78.8	o	o	10	o	10	o	14	o	13	o	12	o	11	o	N. E.	Mostly clear
24	30,048	30 078	30,080	30 045	30,030	30,120	74,8	81,0	82,5	80,3	80 3	79.0	o	o	10	o	10	o	11	o	12	o	10	o	11	o	N E.	Hazy
25	30 048	30,122	30,120	30,110	30,100	30,140	74,0	79 5	81,5	79,0	79,0	79 0	o	o	9	o	12	o	10	o	11	o	11	o	11	o	N. E.	Flying clouds.
26	30,135	30,145	30,140	30,125	30,100	30,075	75,4	81,0	82,2	80,0	80,0	80.0	o	o	10	o	12	o	13	o	12	o	13	o	12	o	N. E.	Hazy
27	......	30,135	30,110	30 075	30,145	30,050	....	80,5	82,5	78 0	78,0	78.8	o	o	0	o	10	o	13	o	14	o	11	o	10	o	N E.	Cloudy
28	30,080	30,094	30,090	30 045	30,045	30,040	79,0	79 6	82,0	86,0	80,0	78,0	o	o	10	o	10	o	13	o	14	o	13	o	12	o	N E.	Cloudy
29	30,035	30,056	30,050	30,030	30,015	30,040	75,0	79,0	81,0	78,8	78 8	78 0	o	o	10	o	10	o	12	o	13	o	13	o	11	o	N. E.	Clear & cloudy at times
30	30 020	30,040	30,034	30,010	30,000	30,040	72,0	78,6	82.0	79,0	79,0	77,2	o	o	10	o	10	o	12	o	13	o	13	o	12	o	N E.	Clear
31	30.020	30,045	30,040	......	30,010	30.040	73.0	79,0	80,7	79,0	79,0	78 0	o	o	10	o	10	o	11	o	0	o	13	o	12	o	N E.	Hazy

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height....	30,215	84,5
Least Height......	30,000	72,0
Mean	30,1075	78,25
Extreme Difference.	00,215	12,5

	Rain. Inches.
Observed....	2,8
Reduced	0,7

	Hygrometer. Dry.	Damp.
Greatest Height....	14,0	8
Least	1	1
Mean	7,5	4,5
Extreme Difference.	13,0	7

PHASES OF THE MOON.

	D.	H.	M.	
Full Moon....................	1	11	32	A.
Last Quarter....................	10	1	50	M.
New Moon....................	17	11	14	M.
First Quarter....................	24	3	5	M.
Full Moon....................	31	4	27	A.

In this Month

The Moon had receded to the greatest distance on the 7th.

The nearest approach of the Moon to the Earth was on the 19th.

During the year 1819

The Moon was nearest to the Earth on the 5th of August and 19th of December.

The Moon was at the greatest distance from the Earth on the 18th of August and the 7th of December.

TABLE of the MEAN, GREATEST, *and* LEAST *Heights; with the* EXTREME DIFFERENCES, *of the* BAROMETER, *and* THERMOMETER *exposed; together with the* FALL *of* RAIN, *at the* MADRAS OBSERVATORY *in the year* 1819.

MONTHS.	BAROMETER.				THERMOMETER. (*exposed to a free current of air*)				RAIN GAUGE.	
	Mean.	*Greatest.*	*Least.*	*Extreme difference.*	*Mean.*	*Greatest.*	*Least.*	*Extreme difference.*	*Observed.*	*Reduced.*
	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	inches.	inches.
January	30,084	30,200	29,968	00,232	73,2	82,4	64,0	18,4	0	0
February	30,114	30,220	30,008	00,212	76,25	87,0	65,5	21 5	0	0
March	30,0105	30,136	29,885	00,251	79,8	89,6	70,0	19,6	0	0
April	29,8225	30,045	29,600	00,445	83,85	92 2	75,5	16,7	10,1	2,5
May	29,8625	30,025	29,700	00,325	89,85	97,7	82,0	15,7	0	0
June	29,886	29.988	29,784	00,204	91,0	100,0	82,0	18,0	00,5	0,125
July	29,8375	29.945	29,730	00,215	88,0	97,0	79,0	18,0	13,2	3,3
August	29,8765	29.998	29,755	00,243	88,25	96.5	80,0	16,5	04,2	1,5
September	29,9000	30,030	29.770	00,260	84,75	93,0	76,5	16 5	23,6	5.9
October	29.9295	30,075	29.784	00,291	84,00	94.0	74,0	20,0	12,0	3,0
November	29,9870	30.200	29,774	00,426	81,5	88,0	75,0	13,0	43,4	10,85
December	30,1075	30,215	30,000	00,215	78,25	84,5	72,0	12.5	02,8	0,7

	BAROMETER.	THERMOMETER EXPOSED.	RAIN GAUGE.	
			Observed	*Reduced.*
	inches.	degrees.	inches.	inches.
General Mean	29,951	83,2	109,8	27,45
Greatest Height	30,220	100,0		
Least Height	29,600	64,0		
Extreme Difference	00,620	36,0		

METEOROLOGICAL TABLES.

PART VI.

METEOROLOGICAL JOURNAL

KEPT IN THE

MADRAS OBSERVATORY

IN THE YEAR 1820.

January 1820.

Days.	Barometr.						Thermometer (*exposed to a free current of air.*)						Rain Gauge.		Hygrometer.						Winds.	Weather, &c.
	Sun rise.	*10 o'clock.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*Sun rise.*	*10 o'clock.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*From Sun-rise to Sun-set.*	*From Sun-set to Sun-rise.*	*Sun-rise.* Dry.	*10 o'clock.* Dry.	*Noon.* Dry.	*2 o'clock.* Dry.	*Sun-set.* Dry.	*9 o'clock.* Dry.		
	inches.	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	deg.	inch.	inch.	d.	d.	d.	d.	d.	d.		
1	30,000	30,045	30,040	30,008	29,978	30,020	73,2	79,4	82,2	81,0	80,0	78,0	0	0	10	11	12	12	10	11	N. Easterly	Mostly clear.
2	30,010	30,035	30,033	30,000	29,972	30,000	74,5	76,0	80,0	79,0	75,5	76,0	0	0	10	9	6	5	2	3	N. E.	Cloudy—some rain.
3	30,000	30,026	30,010	29,965	29,960	29,962	74,0	79,0	80,8	78,5	78,0	78,0	0	0	4	4	4	5	5	5	N. E.	Cloudy—halo round the moon.
4	30,000	30,010	29,975	29,970	29,985	30.045	74,2	78,5	80,0	80,0	79,2	76,0	0	0	5	6	7	9	8	7	N. E.	Cloudy.
5	.....:	29,965	29,945	29,910	29,907	29,940	....	75,5	78,8	80,0	77,5	74,8	0	0	0	8	10	12	15	15	N. E.	Hazy.
6	30,000	30,018	30,000	29,954	29,960	30,000	70,0	76,5	80,0	80,2	76,0	75,0	0	0	16	16	15	15	14	12	N. E.	Clear—dew at night. [morning.
7	30,020	30,067	30,058	30,025	30,030	30,060	72,0	77,0	79,5	80,0	77.5	75,5	0	0	13	10	13	13	14	15	N. E.	Clear—dew on the ground in the
8	30,100	30,118	30,100	30,105	30,038	30,060	70,5	76,0	79,5	80,5	77,0	74.0	0	0	14	12	16	17	16	17	N. E.	Clear—heavy dew.
9	30,045	30,100	30,080	30,045	30,035	30,050	69,8	75,0	77,5	78,7	75,5	74,0	0	0	15	16	13	15	16	17	E.	Clear—dew in the morning.
10	30,080	30,125	30,120	30,088	30,050	30,075	70,0	74,0	78,8	78,8	75,0	71,0	0	0	16	18	18	17	16	15	Variable.	Clear—dew.
11	30,140	30,155	30,145	30,125	30,105	30,110	70,0	75,0	78.8	79,0	76,0	74,2	0	0	14	16	16	13	14	14	Variable.	Clear—dew.
12	30,100	30,172	30,125	30,145	30,110	30,030	69,2	77,7	78.8	79,0	76,0	74,2	0	0	13	15	18	17	19	10	N. E.	Clear—dew.
13	30,115	30,145	30,130	30,112	30,075	30,100	70,0	76,6	78,0	78,7	75,5	75,0	0	0	16	17	18	18	18	19	N. E.	Clear—dew.
14	30,104	30,140	30,145	30,110	30,100	30,143	70,0	75,5	78,8	78,8	76,0	76,0	0	0	16	17	19	20	20	20	N. E.	Mostly hazy.
15	30,125	30,175	30,135	30,135	30,132	30,155	70,0	77,5	78,8	79,0	77,0	76,6	0	0	18	18	19	19	17	17	Variable.	Hazy—dew.
16	30,130	30,170	30,160	30,145	30,110	30,145	71,5	78,8	79,8	79,0	78,0	77,2	0	0	17	18	19	18	17	16	N. E.	Hazy.
17	30,087	30,135	30,130	30,100	30,105	30.145	70,0	77.5	79,5	78,8	77,5	77,0	0	0	15	18	19	20	19	18	Variable.	Clear.
18	30,125	30,160	30,145	30,118	30,104	30,140	71,8	77,6	79,4	79,8	77,2	75,0	0	0	17	17	18	18	16	17	N. E.	Clear—dew.
19	30,165	30,147	30,140	30,146	30,078	30,100	70,0	76,5	79,8	79,0	77,5	76,5	0	0	15	16	17	17	18	17	N. E.	Clear.
20	30,105	30,137	30,130	30,128	30,100	30,120	71,2	77,2	79,2	79,8	77,2	75.0	0	0	16	17	18	19	18	17	N. E.	Clear—dew.
21	30,125	30,155	30,114	30,100	30,104	30,118	70,0	77,5	80,2	79,2	76,7	75,5	0	0	15	17	19	18	17	17	N. E.	Cloudy—hazy.
22	30,105	30,135	30,110	30,118	30,100	30,100	73,0	78.6	80,8	79,8	78,0	76,7	0	0	15	18	19	18	17	17	N. E.	Clear—clouds.
23	30,110	30,125	30,115	30,110	30,065	30,100	74,0	79,0	81,5	81,4	78,0	78.0	0	0	16	17	18	19	18	16	N. E.	Clear—clouds.
24	30,050	30,135	30,124	30,120	30,065	30,110	74,0	80,2	81,2	82,0	78,5	76,8	0	0	15	17	18	19	18	15	N. E.	Clear—hazy at times.
25	30,112	30,144	30,115	30,068	30,100	30,110	72,5	79,6	80,4	80,0	78,5	76,2	0	0	15	17	16	16	16	18	N. E.	Clear—hazy.
26	30,110	30,175	30,154	30,123	30,115	30,140	72,0	77,5	79,2	79,2	77,6	76,5	0	0	17	18	19	19	18	18	N. E.	Hazy—flying clouds.
27	30,130	30,148	30,145	30,100	30,110	30,125	70,5	78,0	79,8	80,8	77,5	77,0	0	0	17	16	18	19	18	17	N. E.	Hazy.
28	30,100	30,155	30,150	30,115	30,104	30,120	72,5	77,5	81,0	81,2	80.0	77,7	0	0	16	17	19	18	17	16	N. E.	Clear—clouds.
29	30,120	30,126	30,135	30,120	30,085	30,100	71,5	78,5	81,5	82,2	80,0	78,8	0	0	16	17	18	18	16	16	N. E.	Cloudy.
30	30,110	30,155	30,108	30,115	30,085	30,115	70,0	81,5	82,0	82,2	80,0	79,5	0	0	14	16	16	16	13	14	N. E.	Clear—hazy.
31	30,110	30,185	30,178	30,132	30,115	30,140	71,2	81,0	81,8	81,0	79,0	78,0	0	0	13	14	14	14	14	14	N. E.	Clear—hazy.

	Barometer.	Thermometer.
	Inches.	Degrees.
Greatest Height....	30,185	82,2
Least	29,907	69,2
Mean	30,046	75,7
Extreme Difference	00,278	13,0

	Hygrometer.
	Dry.
Greatest Height...	20,0
Least...........	2,0
Mean	11,0
Extreme Difference	18

PHASES OF THE MOON.

	D.	H.	M.
Last Quarter..........	8	9	43 A.
New Moon..........	15	10	14 A.
First Quarter.........	22	2	3 A.
Full Moon............	30	11	6 M.

In this Month

The Moon had receded to the greatest distance on the 4th.

The nearest approach of the Moon to the Earth was on the 16th.

February 1820.

Days.	Barometer.						Thermometer (exposed to a free current of air.)						Rain Gauge.		Hygrometer.						Winds.	Weather, &c.
	Sun rise.	10 o'clock.	Noon.	2 o'clock.	Sun set.	9 o'clock.	Sun rise.	10 o'clock.	Noon.	2 o'clock.	Sun set.	9 o'clock.	From Sun-rise to Sun-set.	From Sun-set to Sun-rise.	Sun rise.	10 o'clock	Noon.	2 o'clock.	Sun set.	9 o'clock.		
															Dry.	Dry.	Dry.	Dry.	Dry.	Dry.		
	inches.	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	deg.	inch.	inch.	d.	d.	d.	d.	d.	d.		
1	30,115	30,185	30,170	30,150	30,145	30 155	71,5	78,8	83,2	82,0	80,0	78,8	0	0	13	15	17	17	15	16	N. E.	Clear—hazy
2	30,140	30,175	30,155	30,130	30,110	30,128	72 5	79,0	82,2	83,0	80,0	80,0	0	0	16	17	17	14	15	14	N. E.	Clear.
3	30,112	30,158	30,150	30,100	30 140	30,087	73 0	80,2	82·5	83,0	81,5	78,0	0	0	13	14	15	15	14	14	Calm & N. E.	Clear.
4	30,100	30,135	30.128	30,105	30 085	30,115	72,2	79,2	81,6	82,0	80,0	77,2	0	0	13	15	15	15	14	14	N. E.	Clear—dew at night.
5	30,076	30,135	30,118	30,075	30,054	30,075	72,4	79.0	81 5	81,0	78,7	77,4	0	0	13	15	14	14	14	12	Variable.	Clear.
6	30,075	30,126	30 095	30,065	30 045	30,055	73,0	79,4	81,4	81,7	79,7	79,8	0	0	12	13	12	12	12	11	N. E.	Clear.
7	30,074	30,145	30,122	30.068	30,055	30,115	75,4	79,8	82,4	82,7	80,2	79,0	0	0	11	11	13	15	14	13	Variable.	Clear.
8	30 086	30,145	30,138	30,082	30 075	30,115	75.0	79,6	81,7	82,4	80,0	78,5	0	0	13	12	13	14	14	13	Calm & E.	Clear—dew at night.
9	30,082	30,155	30.148	30,130	30.110	30.155	74,0	79 6	83,5	83,8	81,5	79,5	0	0	13	12	14	14	14	13	E.	Clear.
10	30,120	30,145	30,135	30,100	30.085	30,115	73 5	80,0	84,5	83,5	80,2	78,0	0	0	13	14	15	15	14	13	E.	Clear.
11	30,120	30,146	30,145	30 135	30,100	30,134	75,0	80,0	83,3	83,5	80,0	78,8	0	0	14	13	13	16	15	15	Variable.	Clear.
12	30,125	30,165	30,155	30,115	30,110	30,160	76,0	79,0	82,0	81,5	79,2	77,5	0	0	15	16	15	15	14	14	E.	Clear.
13	30.110	......	30,125	30,076	30.065	30,075	74.0	....	82,2	81,5	80,0	78,5	0	0	14	0	14	14	13	13	S. E.	Clear.
14	30,065	30,095	30,055	30,048	30,050	30,065	70,0	79,0	84,0	84,5	82,0	77,0	0	0	12	12	16	17	16	17	E.	Clear.
15	30,055	30,095	30,100	30,065	30,035	30,065	71.0	79,0	82,8	82,0	80 0	77,8	0	0	16	14	15	16	16	15	S. E.	Clear.
16	30,060	30,078	30,060	30,025	30,004	30.040	72,5	78,0	82,2	83,3	80,0	76,0	0	0	14	15	16	20	19	17	S. E.	Clear.
17	30,005	30,075	30,060	30,045	30,055	30.055	71,0	78,0	82,5	83.3	80,0	75,0	0	0	16	15	16	17	16	17	S. E.	Clear.
18	30,035	30,035	30,000	30,025	30,062	30,085	70,0	79 5	83,0	83,5	78,5	77,8	0	0	15	15	17	18	17	18	S. E.	Clear.
19	30,060	30,058	30,055	30 025	30,005	30,025	73,5	80,0	82,8	83 2	80,0	78,0	0	0	17	15	17	17	16	16	E.	Clear.
20	30,015	30,050	30,045	30,010	30,000	30,105	75 0	81.5	83,5	84.4	80,5	80,0	0	0	17	18	18	20	16	16	S. E.	Clear.
21	29,985	30,064	30,005	30,010	30,000	30,015	76.7	83,0	85 0	85.4	81,5	82,0	0	0	12	13	16	16	15	16	S. E.	Clear.
22	30,015	30,055	30,045	30.025	30,000	30,015	78.0	82,0	85,5	86,8	83,4	82,5	0	0	15	16	18	23	20	18	S. E.	Clear.
23	30,010	30,100	30,088	30,025	30,000	30 010	75,0	83 0	85,5	86,0	81,5	78,5	0	0	16	17	18	19	17	15	S. E.	Clear.
24	30,000	30,044	30,015	29,966	29,945	29,946	70,0	83,0	84.5	86,0	82,5	81,2	0	0	14	16	17	18	15	15	S. E.	Clear.
25	29 950	30,010	30,000	29,965	29,945	29,965	78,8	83,0	85,7	85,5	82.0	81,2	0	0	14	15	17	18	14	13	S. E.	Clear—dew every night to this date.
26	30,020	30,088	30,100	30,040	30,035	30,060	80.5	83,0	84,8	85,0	83,0	81,2	0	0	12	19	15	15	14	13	S. E.	Clear—hazy.
27	30,085	30,148	30,162	30,115	30,065	30,100	79,0	83,0	84,0	84,5	82,2	81,2	0	0	14	15	16	16	15	16	E.	Clear—cloudy.
28	30,100	30,165	30,140	30,130	30,100	30,120	80,0	83,0	84.4	84,0	81,5	81,0	0	0	13	14	16	16	15	14	E.	Clear—cloudy.
29	30,110	30.136	30,100	30,055	30.060	30.110	76.0	82.0	84,5	84,5	82,8	81,5	0	0	13	14	16	17	15	16	E.	Clear.

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height....	30,185	86,8
Least Height......	29,945	70,0
Mean............	30,060	78,4
Extreme Difference..	00,240	16 8

	Hygrometer. Dry.
Greatest Height....	20.0
Least..............	11,0
Mean	15,5
Extreme Difference.	9,0

PHASES OF THE MOON.

	D.	H.	M.
Last Quarter..............	7	2	35 A.
New Moon..............	14	8	37 M.
First Quarter..............	21	3	35 M.
Full Moon..............	29	6	15 M.

In this Month

The nearest approach of the Moon to the Earth was on the 13th;
The Moon had receded to the greatest distance on the 27th.

March 1820.

Days.	BAROMETER.						THERMOMETER (*exposed to a free current of air.*)						RAIN GAUGE.		HYGROMETER.											WINDS.	WEATHER, &c.
	Sun rise.	*10 o'clock.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*Sun rise.*	*10 o'clock.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*From Sun-rise to Sun-set.*	*From Sun-set to Sun-rise.*	*Sun-rise.*		*10 o'clock.*		*Noon.*		*2 o'clock.*		*Sun-set.*	*9 o'clock.*			
															Dry.	Damp.	Dry.	Damp.	Dry.	Damp.	Dry.	Damp.	Dry.	Dry.	Damp.		
	inches.	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	deg.	inch.	inch.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.		
1	30,100	30,135	30,100	30,060	30,045	30,088	78,5	81,2	83 5	84 2	82,2	80.5	0	0	14	0	16	0	20	0	21	0	20	19	0	S. E.	Mostly hazy.
2	30,100	30,116	30,100	30,065	30,057	30,100	78,0	81,0	83.5	83,6	82,5	80,0	0	0	15	0	17	0	19	0	20	0	19	19	0	S. E.	Clear—dew at night.
3	30,068	30,124	30,110	30,100	30,055	30,068	76,2	81,0	83,3	83,5	83,5	81,5	0	0	14	0	16	0	18	0	17	0	17	16	0	S. E.	Clear—dew.
4	30,100	30,135	30,110	30,100	30,065	30,100	71,0	81,0	82,5	84,5	83,2	80,5	0	0	13	0	15	0	18	0	22	0	21	20	0	S. E.	Clear—a thick fog in the morning.
5	30,100	30,125	30,100	30,036	30,025	30,035	80,0	82,5	83,5	83,0	82,0	81,5	0	0	16	0	19	0	21	0	21	0	29	19	0	Variable.	Clear—dew.
6	30,040	30,115	30,100	30,065	30,035	30,044	76,8	81,5	84,5	84,8	83,0	82,0	0	0	18	0	19	0	20	0	21	0	19	20	0	S. E.	Clear.
7	30,050	30,110	30,100	30,055	30,085	30,088	70,5	82 0	86,2	89,3	85,5	83 8	0	0	14	0	15	0	22	0	23	0	20	17	0	S. E.	Clear—a thick fog.
8	30 020	30,116	30,100	30 065	30 054	30,100	70,0	81,0	83.5	84,5	81,0	80,8	0	0	10	0	11	0	14	0	15	0	13	15	0	E.	Clear—a thick fog.
9	30,100	30,133	30,100	30 048	30,025	30,055	75,8	85 2	88,8	87,0	81 5	82,0	0	0	14	0	11	0	14	0	13	0	11	10	0	N. E.	Cloudy—some rain.
10	30,035	30,145	30,140	30,085	30,070	30,100	77,5	84,0	86,0	85,4	83,5	83 0	0	0	9	0	10	0	12	0	10	0	13	15	0	N. E.	Cloudy—hazy.
11	30,100	30 175	30,164	30,145	30 125	30,138	78,0	84,5	86 5	86 0	85,0	83 5	0	0	13	0	15	0	16	0	15	0	15	15	0	S. E.	Clear.
12	30,065	30,210	30,200	30,165	30,138	30,150	78 0	84,0	87,0	87 0	84,5	83 5	0	0	15	0	16	0	16	0	15	0	16	16	0	S. E.	Clear.
13	30,135	30,145	30,150	30,120	30,100	30,110	77,7	79 4	86,8	86,6	85,0	85,0	0	0	14	0	14	0	15	0	15	0	15	16	0	S. E.	Clear.
14	30,115	30,155	30,134	30 086	30,048	30,100	78.4	84,0	85,2	86 0	84 2	82,5	0	0	15	0	15	0	16	0	15	0	16	15	0	N. E.	Clear.
15	30,068	30,145	30,100	30 058	30,065	30,100	77,7	83,4	86 2	86,0	84,0	83,0	0	0	14	0	16	0	16	0	18	0	17	16	0	S. E.	Clear.
16	30,066	30 100	30 100	30,058	30,005	30,065	80,0	84,0	86,2	87,0	83,8	81,5	0	0	15	0	16	0	17	0	17	0	15	14	0	S. E.	Clear.
17	30,045	30,045	30 075	30,050	29,955	30 000	75,0	84,5	86,5	87,2	85,0	84 4	0	0	13	0	12	0	14	0	15	0	14	14	0	S. E.	Clear.
18	30 028	30,035	30,050	30 000	29,965	30,000	80,0	84,4	86,6	86,8	84,5	83,0	0	0	13	0	13	0	16	0	17	0	15	14	0	S. E.	Clear—dew.
19	30,005	30,048	30,055	30,025	30,000	30,015	75,0	84,0	86,5	87,0	85,0	81,0	0	0	13	0	13	0	16	0	17	0	16	16	0	Variable.	Clear fog.
20	30,020	30,045	30,055	30,018	29,965	......	74,3	83 4	86,2	87,2	84,3	....	0	0	15	0	16	0	19	0	19	0	17	0	0	S. E.	Clear.
21	30,000	30,055	30,045	30,000	29,968	30 060	75,5	84 5	87,2	87,2	85 5	83,5	0	0	15	0	17	0	18	0	18	0	17	16	0	S. E.	Clear.
22	30,004	30 064	30,025	30,046	30,000	30,005	75,5	84,0	86 2	87,0	84,5	84,0	0	0	14	0	15	0	17	0	18	0	17	16	0	S. E.	Clear—fog in the morning.
23	30 010	30,065	30,055	30,048	29,978	30 000	76,6	84,0	87,0	86 5	84,5	83 5	0	0	14	0	12	0	16	0	17	0	16	15	0	S. E.	Mostly hazy—dew.
24	30,000	30,040	30 000	29,955	29 943	29,988	74,5	84,5	87 7	87,5	85,5	84 0	0	0	13	0	14	0	15	0	15	0	15	14	0	S. E.	Clear—fog.
25	30 000	30,025	30,008	30,000	29,958	30,000	78,0	84,5	86 8	87,5	84 2	83,4	0	0	13	0	14	0	15	0	15	0	14	14	0	S. E.	Clear—dew.
26	29,998	30,045	30,065	30,018	30 015	29 998	78,0	84,0	86,5	86,8	83,0	85 0	0	0	15	0	15	0	15	0	16	0	15	14	0	S. E.	Mostly hazy.
27	30,000	30,015	30,000	29 988	29,945	29,988	78,0	85,4	88,0	87,5	86 0	84,5	0	0	14	0	15	0	17	0	18	0	17	14	0	S. E.	Clear—halo round the Moon.
28	29 915	29 955	29,960	29,935	29,904	29,935	80,0	88 0	88,7	88,7	86,2	85 0	0	0	14	0	11	0	15	0	14	0	15	13	0	N. E.	Cloudy—some rain.
29	29 900	29 935	29 925	29,888	29 800	29,800	77,5	81 0	79,5	79,0	77,0	75,5	0	0	10	0	8	0	8	0	7	0	3	3	0	N. E.	Cloudy—rain.
30	29,560	29,678	29,750	29 740	29,745	29,810	75 0	74 6	76,2	70,5	80,4	79,0	18,0	6,0	0	14	0	14	0	12	0	9	0	0	1	Stormy day	Cloudy—heavy rain.
31	29,885	29,915	29,900	29 865	29 825	29 860	78,0	80.5	83 3	85,8	83,0	83 0	0	0	0	2	0	3	5	0	5	0	0	1	0	Variable.	Clear—distant lightning.

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height....	30.210	89,3
Least Height......	29,560	70,0
Mean	29 885	79,65
Extreme Difference.	00,250	19,3

	Rain. Inches.
Observed....	27,0
Reduced	6,75

	Hygrometer. Dry.	Damp.
Greatest Height....	29,0	14.0
Least	1	1,0
Mean	15,0	7,5
Extreme Difference.	28,0	13,0

PHASES OF THE MOON.

	D.	H.	M.	
Last Quarter........................	8	3	31	M.
New Moon	14	6	42	A.
First Quarter......................	21	7	22	A.
Full Moon..............	30	0	7	M.

In this Month

The nearest approach of the Moon to the Earth was on the 13th.
The Moon had receded to the greatest distance on the 26th.

April 1820.

Days.	Barometer.						Thermometer (*exposed to a free current of air*)						Rain Gauge		Hygrometer.							Winds.	Weather, &c.
	Sun rise.	10 o'clock.	Noon.	2 o'clock.	Sun set.	9 o'clock.	Sun rise.	10 o'clock.	Noon.	2 o'clock.	Sun set.	9 o'clock.	From Sun-rise to Sun-set.	From Sun-set to Sun-rise.	Sun-rise, Dry.	10 o'clock Dry.	10 o'clock Damp.	Noon. Dry.	2 o'clock. Dry.	Sun set. Dry.	9 o'clock. Dry.		
	inches.	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	deg.	inch.	inch.	d.	d.	d.	d.	d.	d.	d.		
1	29.900	29,960	29.950	29,915	29,888	29 935	79 8	84,0	86,2	92.2	86,5	84,2	0	0	2	0	2	5	12	7	3	South W.	Clear.
2	29 915	30,000	29,988	29,925	29,915	29 940	80.0	84,5	87,0	88.8	84 0	85,0	0	0	4	10	0	4	3	2	1	S E.	Clear.
3	29 930	29,984	30,000	29,945	29,910	29,970	78.6	85.4	88,2	87,7	86,0	81,0	0	0	2	4	0	7	10	3	5	S E.	Cloudy—rain.
4	29 975	30,025	30,020	30,000	29,965	29,978	80,0	84,0	87 5	87,0	86,0	84,5	2,0	0	1	5	0	7	7	6	5	S. W. & S. E.	Clear—lightning in the S. E. Qr.
5	30.000	30 050	30.040	30 000	29,975	30,000	82 0	85,0	87.0	86.5	85,4	84,0	0	0	6	6	0	9	10	7	7	S. E.	Clear.
6	30 010	30,065	30 062	30,018	29.998	30,018	82,5	85 5	87 2	87,2	85,3	85,0	0	0	5	8	0	10	11	10	10	Variable.	Mostly clear—lightning to the N.
7	30,010	30,060	30.055	30,000	29.997	30,000	81,6	86,0	88.2	88.0	84,0	84 0	0	0	7	10	0	14	14	8	7	S. W. & S. E.	Clear.
8	30.000	30,045	30,025	29,978	29,925	29 955	82,8	86,0	89 5	88,5	86,0	85,2	0	0	7	7	0	11	12	10	8	S. E.	Clear—lightning to the West.
9	29,950	30,026	30,030	29 975	29,925	29,975	84,0	87,4	91,0	90,0	86,0	84,4	0	0	7	15	0	20	19	15	15	S. E. & S. W.	Clear—lightning in the S. W. Qr.
10	29 970	30.015	30,020	29,975	29.940	30,000	83,0	87,5	91,2	92,0	86 0	86,0	0	0	13	14	0	17	20	18	14	S. E.	Clear—dew at night.
11	30 005	30,065	30,060	30 015	29 975	30,000	84,4	88,2	91.5	90.0	88,0	85,5	0	0	14	16	0	18	15	12	10	S E.	Clear—dew.
12	30,005	30,065	30 055	29,985	29,970	30,010	84,0	87,0	89,2	88,5	85,0	84,4	0	0	10	14	0	14	12	10	9	S. E.	Clear—dew.
13	30,020	30,110	30,100	30,000	30,000	30,010	84.0	86.6	89,2	88 0	86,4	86,0	0	0	10	9	0	12	14	13	14	S. E.	Clear—dew.
14	30,015	30.065	30.050	29,988	30,000	30,045	83,5	85,6	87,7	87,7	85,0	83,0	0	0	10	10	0	14	12	11	10	S. E.	Clear.
15	30,010	30,055	30,050	30,045	30,010	30,040	82,5	85,2	87,0	86,6	84.8	54,0	0	0	9	10	0	12	13	12	11	S. E.	Clear.
16	30.000	30.025	30,025	29,984	29,915	29.940	82,7	85,0	87,6	87,2	85,2	84.5	0	0	10	13	0	14	13	12	11	S. E.	Clear—dew at night.
17	29,940	30,010	30,000	29.955	29,900	29 950	82.5	88,2	91,5	88,0	84 0	84 5	0	0	10	14	0	16	12	10	12	S. E.	Hazy—dew on the ground in the morning.
18	29,980	30,018	30 000	29,965	29 915	29,970	83,0	88,0	89,8	90.2	86,0	84,0	0	0	7	7	0	10	14	11	10	S. E.	Hazy.
19	29.975	30,040	30,025	29.965	29.965	29,945	84.5	88.0	90 2	89,8	86,2	85,0	0	0	10	14	0	14	14	13	13	S. E.	Clear—halo round the Moon at night.
20	29.920	29 970	29,965	29,925	29,868	29,910	84,5	84,8	87,6	89,8	86,0	85,0	0	0	10	8	0	16	15	13	12	S. E.	Cloudy—lightning at night.
21	29 925	29.965	29,966	29,945	29 925	29,970	82,0	82,5	86 5	86,5	85.4	85,0	0	0	8	13	0	14	14	13	10	S. E.	Cloudy—lightning in the S. W. Qr.
22	29,998	30,025	30,605	30,025	30,040	30,050	82 0	86.4	88,0	88,2	86,5	85,0	0	0	10	10	0	15	16	14	10	S. E.	Cloudy—lightning—halo round the Moon.
23	30,040	30,095	30.120	... ..	30,047	30,045	84,0	86,4	87,7	....	85,5	85,2	0	0	9	11	0	12	0	10	12	S. E.	Cloudy—halo round the Moon.
24	30,040	30,072	30 075	30,025	30,000	30,004	83,0	86 6	88.2	88,0	87,0	85 0	0	0	11	12	0	13	14	12	11	S. E.	Clear—dew—halo round the Moon.
25	30,000	30,020	30.020	29.968	29.915	29 940	83,5	87,4	90,2	89.2	86.0	86,0	0	0	14	11	0	12	13	12	13	S. E.	Clear—dew at night.
26	29.940	29,987	30,000	29 958	29 910	29 945	85,2	87,7	89,5	89,2	87,0	86 0	0	0	14	12	0	14	15	14	14	S. E.	Clear—dew.
27	29,940	2[illegible] 978	30 000	29,928	29,900	29,930	84,4	88,5	89,8	90,5	86,6	86,0	0	0	13	10	0	14	14	13	12	S. E.	Clear—dew.
28	29,955	29 982	29 975	29.918	29 888	29.900	84,8	88.4	90,2	90,0	86,4	86,0	0	0	13	11	0	14	14	13	12	S. E.	Clear.
29	.... .	29 972	29,955	29,988	29,855	29,888	....	87,0	89 8	90,5	86,2	86,0	0	0	0	10	0	13	16	14	13	S. E.	Clear.
30	29,900	29 925	29.930	99 920	29 855	29 875	85,0	88,4	89.4	89,8	85.5	85,0	0	0	10	11	0	14	15	10	11	S. E.	Clear.

	Barometer Inches.	Thermometer. Degrees.
Greatest Height....	30.120	92 2
Least Height......	29.855	78,6
Mean..............	29 9875	85,4
Extreme Difference.	00,265	13.6

	Rain. Inches.
Observed......	2,0
Reduced......	0,5

	Hygrometer. Dry.	Damp.
Greatest Height....	20 0	2
Least	1.0	0
Mean..............	10 5	1
Extreme Difference.	19,0	2

PHASES OF THE MOON.

	D	H.	M.
Last Quarter..............	6	0	45 A.
New Moon................	13	4	35 M.
First Quarter..............	20	0	43 A.
Full Moon................	28	3	16 A.

In this Month

The nearest approach of the Moon to the Earth was on the 10th;
The Moon had receded to the greatest distance on the 22d.

May 1820.

Days.	BAROMETER.						THERMOMETER (*exposed to a free current of air.*)						RAIN GAUGE		HYGROMETER.												WINDS.	WEATHER, &c.
	Sun rise.	*10 o'clock.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*Sun rise.*	*10 o'clock.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*From Sun-rise to Sun-set.*	*From Sun-set to Sun-rise.*	*Sun-rise.*		*10 o'clock*		*Noon.*		*2 o'clock.*		*Sun-set.*		*9 o'clock.*			
															Dry.	Damp.	Dry.	Damp.	Dry.	Damp.	Dry.	Damp.	Dry.	Damp.	Dry.	Damp.		
	inches.	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	deg.	inch.	inch.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.		
1	29,900	29 948	29,940	29,920	29,900	29,935	84.0	87,5	89,2	89,0	86,0	87,0	0	0	10	0	11	0	14	0	13	0	10	0	12	0	Calm & S. E.	Mostly clear.
2	29,930	29,965	29,988	29 958	29,905	29,945	85.5	87.8	89 8	89,0	87,2	86 5	0	0	11	0	12	0	14	0	13	0	12	0	11	0	Calm & S. E.	Clear.
3	......	29,947	29,958	29,914	29 935	29,985	88.5	88 5	89.2	88,5	85,5	85,0	0	0	0	0	13	0	13	0	13	0	12	0	11	0	S. E.	Hazy—cloudy.
4	29 900	29,925	29,910	29 865	29,845	29,850	84,4	88 6	90 0	90.5	88,4	86,5	0	0	10	0	14	0	14	0	14	0	14	0	13	0	Calm S. E.	Cloudy—thunder and lightning.
5	29,820	29,865	29,860	29,855	29,815	29,830	83,0	88,5	91,5	90,5	88.0	87,0	0	0	13	0	14	0	15	0	14	0	13	0	12	0	Calm S. E.	Hazy—cloudy.
6	29,800	29,825	29,815	29 788	29,758	29 765	86,0	91,5	98,0	98.0	91,0	87,5	0	0	12	0	14	0	16	0	25	0	20	0	18	0	N. W. & N. E.	Hazy.
7	29 800	29,805	29,775	29,755	29,745	29,760	85,0	91,5	94,8	98,2	89,0	88,5	0,2	0	15	0	20	0	21	0	24	0	23	0	22	0	N. W. & N. E.	Cloudy—some rain.
8	29,725	29,750	29,732	29,720	29,675	29,640	84 6	92,5	92,2	86 6	82 5	79,0	0	2,5	19	0	20	0	20	0	19	0	14	0	9	0	Strong N. W.	Cloudy—some rain.
9	29 400	29,274	29 135	29,000	28 670	......	74,0	74,5	75,0	76,5	76,0	...	13,5	31,0	10	0	1	0	0	9	0	10	0	20	0	0	Storm.	Cloudy—heavy rain.
10	29,633	29,755	29,745	29,725	29,750	......	76,4	79,5	81.5	83,7	82,2	...	19,0	0	0	6	0	9	0	2	0	2	0	5	0	0	South & S. E.	Cloudy.
11	29,855	29,915	29,900	29,844	29,815	29,825	77,7	82,2	86,5	85,2	83 5	83,0	0	0	0	1	0	3	5	0	2	0	0	6	0	5	Land & S. E.	Mostly clear.
12	29,850	29,900	29,878	29,835	29,800	29,830	80,0	83,2	87,2	88,0	84 0	83,2	2,5	0	0	2	0	5	11	0	10	0	0	0	5	0	Variable.	Clear—some rain in the morning.
13	29,845	29,915	29,900	29 855	29,800	29 835	80,4	84 0	87,2	85,4	85,0	83,0	0	0	6	0	5	0	9	0	15	0	12	0	0	1	Land & S. E.	Clear.
14	29,860	29,900	29,928	29,910	29,885	29,900	80,2	83,5	89,5	89 0	85,2	84,5	0	0	0	2	2	0	15	0	16	0	10	0	10	0	Calm.	Mostly clear.
15	29 920	29,940	29,950	29,900	29,865	29,900	82,0	85.0	91,0	92,5	86,6	84,5	0	0	10	0	15	0	16	0	18	0	15	0	10	0	S. W. & S. E.	Clear.
16	29,920	29 940	29,950	29,900	29,865	29,900	82,0	85,0	91,0	92,5	86,6	84,5	0	0	9	0	12	0	14	0	12	0	10	0	10	0	S W or Land S E.	Clear.
17	29 888	29.925	29,900	29 868	29,865	29.900	80.5	88,2	92,2	92 0	85,2	85,0	0	0	7	0	5	0	15	0	12	0	10	0	6	0	S. W. & S. E.	Clear—hazy at times.
18	29 900	29,955	29,940	29,940	29,920	29 975	80,0	87.5	89,8	88,5	85,0	83,0	0	0	5	0	10	0	15	0	16	0	7	0	1	0	S. W. & S. E.	Clear—hazy.
19	30.000	30,025	30,020	29,985	29 978	30,000	80 5	88,0	89,0	87,8	85,0	83 0	0	0	5	0	10	0	11	0	2	0	1	0	0	2	S. W. & S. E.	Clear.
20	29,998	30,025	30,100	29,968	29,918	29,938	83,0	87,0	90,0	91,0	84,5	85 0	0	0	1	0	1	0	9	0	8	0	6	0	6	0	S W. & S. E.	Clear.
21	29.925	29,925	29,920	29 900	29,845	29,880	81.5	88,0	91,2	92,2	86 0	86 0	0	0	5	0	6	0	11	0	18	0	12	0	10	0	S. E.	Clear—distant lightning.
22	29.885	29,918	29,910	29 865	29,845	29,868	81,4	88,8	91,5	91,0	87,5	86,6	0	0	11	0	14	0	15	0	15	0	14	0	12	0	Land & S. E.	Clear.
23	29.865	29,925	29,915	29,900	29,858	29,918	82,0	89,5	93,5	96 4	86 5	86,3	0	0	10	0	13	0	20	0	26	0	17	0	11	0	Land & S. E.	Clear.
24	29,864	29,915	29,918	59,872	29 874	29,866	82,0	90.5	95 2	92,0	87,4	86,7	0	0	11	0	13	0	19	0	16	0	13	0	12	0	S. W. & S. E.	Clear—distant lightning.
25	29,875	29,926	29 935	29 878	29,842	29,870	82,0	90.0	91,5	92,0	87,0	85.0	0	0	16	0	19	0	18	0	18	0	14	0	8	0	S. E.	Clear.
26	29 855	29,908	29,894	29,862	29,822	29 830	82,6	90,0	93,4	94,6	86,6	85.6	0	0	10	0	18	0	24	0	28	0	20	0	16	0	Land.	Mostly clear—distant lightning.
27	29 824	29,885	29,874	29,815	29 775	29,784	82,4	87,4	88,4	90,0	85,0	85,4	0	0	15	0	16	0	15	0	17	0	12	0	12	0	S. E.	Clear—hazy.
28	29.815	29,865	29,868	29,830	29,785	29.795	82,0	88,4	91,4	90,4	85 0	85,0	0	0	15	0	16	0	21	0	20	0	12	0	10	0	S. W. & S. E.	Clear—hazy.
29	29 875	29 944	29,948	29.884	29,855	29,875	84,5	89,0	92,6	90.4	86 8	86 2	0	0	17	0	17	0	22	0	20	0	15	0	14	0	Land & S. E.	Mostly clear—halo round the Moon.
30	29,888	29,935	29,930	29,874	29,825	29,835	83,0	89.5	92,7	96,0	88,0	85 6	0	0	15	0	19	0	23	0	27	0	20	0	16	0	Land.	Clear.
31	29 845	29.882	29 882	29 852	29 815	29,832	83,0	88 6	91.0	94 6	87.0	85.0	0	0	18	0	22	0	26	0	29	0	21	0	16	0	Land.	Hazy—halo round the Moon.

	Barometer.	Thermometer.
	Inches.	Degrees.
Greatest Height....	30,100	98,2
Least	28,670	74,0
Mean	29,385	86 1
Extreme Difference	1,430	24.2

	Rain.
	Inches.
Observed....	68 7
Reduced	17,175

	Hygrometer.	
	Dry.	Damp.
Greatest Height...	29,0	20,0
Least...........	1,0	1
Mean..........	15.0	10.5
Extreme Difference	28	19,0

PHASES OF THE MOON.

	D.	H.	M.
Last Quarter..........	5	7	11 A.
New Moon............	12	2	30 A.
First Quarter	20	6	43 M.
Full Moon............	28	3	10 M.

In this Month

The nearest approach of the Moon to the Earth was on the 7th.
The Moon had receded to the greatest distance on the 20th.

June 1820.

Days.	Barometer.						Thermometer. (exposed to a free current of air.)						Rain Gauge		Hygrometer.						Winds.	Weather, &c.
	Sun rise.	10 o'clock.	Noon.	2 o'clock.	Sun set.	9 o'clock.	Sun rise.	10 o'clock.	Noon.	2 o'clock.	Sun set.	9 o'clock.	From Sun-rise to Sun-set	From Sun-set to Sun-rise.	Sun-rise.	10 o'clock	Noon.	2 o'clock.	Sun set.	9 o'clock.		
															Dry.	Dry.	Dry.	Dry.	Dry.	Dry.		
	inches.	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	deg.	inch.	inch.	d.	d.	d.	d.	d.	d.		
1	29,825	29,875	29,880	29,855	29,815	29,808	84,0	88,8	92,0	93,0	88,0	88,5	0	0	21	24	26	28	25	22	Variable.	Generally clear—Halo round the Moon
2	29,838	29,872	29,868	29,825	29.785	29,785	85,0	88,8	82,4	94,5	85,2	86,2	0	0	25	26	29	30	19	17	Land (or W.) & S. E.	Clear and hazy
3	29,815	29 875	29,878	29,835	29,815	29,865	83,0	88,0	90,4	92,0	88,0	87,0	0	0	22	25	26	28	21	16	S. W. & S. E.	Cloudy—thunder and lightning
4	29,872	29,916	29,915	29,910	29.945	29,885	85,0	87,7	90,5	91,4	87,4	85,5	0	0	18	20	21	23	20	19	S. W. & S. E.	Hazy—lightning N. W. Quarter
5	29,860	29,925	29,920	29,885	29,835	39,850	85,0	90.0	92,5	91,5	88,0	86,0	0	0	17	21	4	4	21	19	Land & S. E.	Clear—hazy with lightning and some rain
6	29,830	29,885	29,878	29,843	29,800	29,850	84,0	87,5	91,5	93,5	85,5	88,0	0	0	19	20	22	25	19	17	Land & S. E.	Clear—also rain, with vivid and continued lightning.
7	29,830	29,900	29,888	29,838	29,810	29,845	85,0	86,5	88,2	90,0	90,0	89,8	2,2	0	15	18	21	23	26	24	Variable	Cloudy
8	29,850	29,875	29,870	29,845	29,830	29,875	85,0	88,0	90,5	91,2	90,0	90,0	0	0	19	25	28	29	30	25	Land	Hazy
9	29,846	29,878	29,855	29,845	29,825	29,900	88,0	89,2	94,5	96,0	91,5	86,5	0	0	24	28	32	34	31	32	Land	Mostly clear
10	29,855	29,900	29,878	29,855	29,825	29,875	85,5	88,5	92,5	91,0	90,0	87,8	0	0	24	28	31	34	29	23	Land	Clear
11	29,858	29,910	29,878	29,835	29,820	29,840	86,0	89,5	90,4	92,0	90,5	90,0	0	0	25	29	30	30,5	25	22	Land & S. E.	Hazy—lightning and thunder
12	29,863	29,888	29,865	29,855	29,835	29,850	87,0	90,0	92,5	92,2	92,0	90,0	0	0	24	26	29	31	30	28	Land	Cloudy—lightning
13	29 900	29,935	29,920	29.855	29,820	29,870	90,0	90,6	92,0	91,0	90,0	90,0	0	0	30	30	31	32	35	32	Land	Clear—cloudy and some rain
14	29,845	29,900	29,960	29,848	29,830	29,850	89,5	87,5	90,4	89,0	87,7	88,0	0	0	28	28	29	30	25	24	Land	Hazy—lightning
15	29,840	29,888	29,878	29,855	29,840	29,870	87,0	88,8	92,0	92,5	89,5	87,8	0	0	24	26	28	30	25	24	Variable	Clear—some rain and cloudy
16	29,900	29,946	29,940	29,900	29,845	29,885	87,0	89,0	89,5	90,0	89,0	87,8	0	0	23	26	27	30	25	21	Variable	Clear—hazy with showers
17	29,925	29,945	29,930	29,855	29,825	29,830	88,0	90,0	90,4	92,0	87,0	87,0	0	0	24	27	29	31	24	23	Land & S. E.	Clear—flying clouds at times
18	29,840	29,900	29,868	29,855	29,820	29,838	86,5	87,0	87,8	88,5	86,6	86,0	0	0	22	24	26	27	25	21	Land	Cloudy
19	29,825	29,888	29,866	29,845	29,825	29,835	86,0	87,7	91,5	93,0	85,0	85,0	0	0,2	24	26	28	30	25	21	Land	Cloudy—some rain
20	29,820	29,885	29,900	29,845	29,815	29,865	82,0	86,0	89,0	91,0	90,0	87,0	0	0	22	24	28	30	30	28	Land	Cloudy,
21	29,880	29,925	29,918	29,865	29,815	29,840	85,5	89,8	92,5	94,5	86,0	85,0	0	0	27	30	31	32	26	24	Land	Hazy
22	29,824	29,940	29,925	29,885	29,945	29,988	84,5	88,5	90,2	91,5	91,0	90,0	0	0	23	27	29	31	32	30	Land	Hazy
23	30,025	30,085	30,065	30,035	29,958	30,025	87,0	88,8	91,5	92,0	90,0	89,0	0	0	29	30	31	32	30	20	Land & S. E.	Clear
24	30,005	30,088	30,040	30,000	30,000	30,035	86,0	87,5	90,5	91,0	88,7	87,0	0	0	28	25	29	28	22	21	Land & S. E.	Clear—cloudy
25	30,042	30,100	30,008	30,006	30,040	30,100	85,5	87,0	89,6	87,0	86,0	86,0	0	0	26	26	27	29	22	20	L. & Fresh S. E.	Cloudy—some rain
26	30,087	30,104	30,080	30,060	30,045	30,055	83,8	85,0	87,5	88,0	86,6	86,0	1,0	0	22	23	25	25	22	21	S. W. & S. E.	Hazy—cloudy
27	30,112	30,120	30,110	30,065	30,000	30,050	82,6	86,6	88,0	88,0	86,5	86,0	0	0	21	24	27	28	28	29	S. W.	Hazy—cloudy
28	30,084	30,120	29,960	29,966	29,900	29,905	83,0	85.4	91,2	91,5	85.4	83,0	0	0	26	27	29	29	26	21	Land	Hazy
29	29,916	29,965	29,955	29,940	29,905	29,910	81,0	85,0	89,4	91,2	85,2	84,4	0	0	21	23	27	29	23	21	Land & S. E.	Hazy—cloudy
0	29 915	29 975	29,970	29,935	29,900	29,910	80,6	84,5	90,4	92,0	84,2	80,0	0	0	23	24	28	30	25	22	Land	Cloudy—some rain

	Barometer Inches.	Thermometer. Degrees.
Greatest Height....	30,120	96,0
Least Height......	29,785	80,6
Mean.............	29,9075	88,3
Extreme Difference.	00,335	15,4

	Rain. Inches.
Observed......	3,4
Reduced......	0,85

	Hygrometer. Dry.
Greatest Height....	35,0
Least	15,0
Mean............	25,0
Extreme Difference.	20,0

PHASES OF THE MOON.

	D.	H.	M.	
Last Quarter............	4	0	7	M.
New Moon..............	11	1	1	M.
First Quarter............	19	0	23	M.
Full Moon..............	26	0	25	A.

In this Month

The Moon had receded to the greatest distance on the 17th.
The nearest approach of the Moon to the Earth was on the 29th.

July 1820.

Days.	BAROMETER.						THERMOMETER (*exposed to a free current of air.*)						RAIN GAUGE.		HYGROMETER.						WINDS.	WEATHER, &c.
	Sun rise.	*10 o'clock.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*Sun rise.*	*10 o'clock.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*From Sun-rise to Sun-set.*	*From Sun-set to Sun-rise.*	*Sun-rise.* Dry.	*10 o'clock* Dry.	*Noon.* Dry.	*2 o'clock* Dry.	*Sun-set.* Dry.	*9 o'clock.* Dry.		
	inches.	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	deg.	inch.	inch.	d.	d.	d.	d.	d.	d.		
1	29,895	29,945	29,940	29,900	29,900	29,924	81,0	83,8	89,5	89,0	80,0	81,2	0,5	0	22	22	25	27	21	20	Land	Cloudy and rain—with thunder and lightning.
2	29,884	29,935	29,915	29,874	29,865	29,825	78,8	83,0	86,2	87,5	84,5	83,0	2,5	0	17	19	21	23	21	20	Land	Hazy
3	29,850	29,878	29,885	29,848	29,830	29,835	80,5	85,0	88,8	89,5	87,0	86,0	0	0	22	22	22	26	25	25	Land	Mostly hazy
4	29,834	29,885	29,865	29,835	29,800	29,815	82,0	83,5	87,2	88,0	86,0	85,5	0	0	22	22	24	24	23	22	Variable	Cloudy
5	29,795	29,875	29,865	29,848	29,815	29,840	82,4	85,0	90,4	92,8	86,8	87,0	0	0	23	24	27	29	28	24	Land	Mostly clear
6	29,847	29,910	29,905	29,885	29,815	29,860	82,0	86,5	92,0	93,5	85,5	85,5	0	0	21	24	29	31	22	21	Land	Clear
7	29,900	29,928	29,910	29,855	29,845	29,835	85,0	87,7	92,5	95,5	86,5	86,0	0	0	23	25	30	26	26	24	Land	Clear and cloudy
8	29,848	29,865	29,860	29,838	29,815	29,818	85,0	87,5	92,8	94,0	86,0	85,0	0	0	23	26	31	32	25	22	Land	Clear day—hazy at night
9	29,825	29,855	29,840	29,825	29,840	29,850	84,5	87,8	91,8	92,4	86,0	85,0	0	0	24	26	30	32	26	25	Land	Hazy
10	29,900	29,955	29,950	29,938	29,928	29,940	83,0	86,2	92,0	97,0	85,0	84,0	0	0	27	29	30	32	30	25	Land	Hazy
11	29,965	30,025	30,010	29,975	29,915	29,925	80,5	85,6	92,5	91,4	85,4	85,0	0	0	22	25	30	27	25	24	Land	Mostly clear
12	29,945	29,988	29,975	29,928	29,900	29,910	82,0	88,0	90,5	90,4	85,5	84,4	0	0	21	25	27	27	22	20	Land & S. E.	Mostly clear— a rain bow observed
13	29,925	29,955	29,945	29,925	29,900	29,908	80,6	88,0	91,2	92,0	86,5	83,5	0	0	19	25	28	28	22	24	Variable	Cloudy—some rain
14	29,924	29,945	29,930	29,925	29,888	29,918	81,5	83,5	90,0	90,5	85,0	81,0	0	0	21	24	25	24	22	21	Variable	Cloudy—distant lightning.
15	29,915	29,945	29,950	29,918	29,910	29,910	77,8	86,5	90,0	92,5	83,5	81,4	0	0	18	22	26	27	20	19	Variable	Cloudy—some rain
16	29,884	29,945	29,940	29,918	29,900	29,875	79,4	83,5	86,5	88,0	83,5	82,4	0,2	0	16	20	19	21	18	16	Land	Cloudy—some rain
17	29,887	29,900	29,900	29,844	29,910	29,845	78,4	83,2	87,5	90,0	82,3	83,5	0	0	14	15	19	20	15	14	Land	Cloudy—some rain
18	29,848	29,885	29,868	29,878	29,846	29,848	80,0	84,5	87,5	89,2	84,5	83,8	3,5	0	10	15	18	19	17	16	Land	Cloudy—heavy rain, thunder and lightning
19	29,870	29,930	29,920	29,875	29,865	29,875	79,8	83,5	84,5	86,0	83,3	82,5	5,0	0	12	13	13	14	14	13	Variable	Cloudy—lightning—some rain
20	29,900	29,925	29,930	29,918	29,855	29,878	81,8	82,5	85,5	87,0	84,0	83,0	0	0	14	11	14	16	15	14	Land	Cloudy—lightning
21	29,915	29,928	29,920	29,922	29,870	29,900	82,0	85,0	87,0	87,5	83,5	82,0	0	0	14	15	17	18	15	14	Land	Cloudy—lightning—rain bow
22	29,920	29,945	29,935	29,939	29,900	29,925	80,0	82,5	83,0	85,0	80,4	80,4	2,0	0	12	14	13	13	14	15	Land	Cloudy
23	29,927	29,930	29,955	29,945	29,928	29,926	80,0	83,5	84,8	84,0	83,3	82,0	0	0	14	15	18	18	16	15	Land	Cloudy
24	29,920	30,045	30,025	30,060	29,965	30,000	80,0	84,0	84,5	85,5	83,3	82,8	0	0	14	14	18	17	16	15	Land	Cloudy—rain
25	29,955	30,000	29,988	29,975	29,925	29,988	80,2	84,5	87,2	87,0	84,5	84,0	0,4	0	14	18	20	21	20	19	Land	Cloudy—hazy
26	30,015	30,065	30,075	30,045	30,018	30,040	80,5	84,0	85,5	86,5	87,0	85,0	0	0	16	17	21	22	24	20	Land	Hazy
27	30,045	30,075	30,100	30,088	30,048	30,055	81,5	83,5	84,8	85,0	83,3	83,0	0	0	20	21	23	22	20	19	Land	Hazy
28	30,040	30,115	30,115	30,065	30,020	30,025	80,0	81,8	82,2	81,5	80,4	81,0	0	0	15	14	10	10	11	9	Variable	Cloudy—rain
29	30,027	30,068	30,075	30,050	30,028	30,022	80,4	80,0	83,0	84,0	81,8	79,8	0	0	10	7	6	8	7	7	S. W. & Calm	Cloudy—rain
30	30,035	30,060	30,060	30,045	30,000	30,008	78,7	81,2	84,5	84,8	83,0	83,0	0	0	7	6	9	9	8	7	Variable	Mostly clear
31	30,026	30,040	30,055	30,025	29,966	30,000	79,5	82,8	84,0	86,2	84,0	81,7	0	0	7	8	12	14	10	10	Variable	Cloudy—thunder and lightning

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height....	30,115	97,0
Least Height......	29,795	77,8
Mean	29,955	87,4
Extreme Difference.	00,320	19,2

Rain.	Inches.
Observed....	14,1
Reduced	3,525

Hygrometer.	Dry.
Greatest Height....	32,0
Least	6,0
Mean	19,0
Extreme Difference.	26,0

PHASES OF THE MOON.

	D.	H. M.
Last Quarter..................	3	4 58 M.
New Moon..................	10	0 57 A.
First Quarter..................	18	4 45 A.
Full Moon..................	25	8 14 A.

In this Month

The Moon had receded to the greatest distance on the 14th.

The nearest approach of the Moon to the Earth was on the 27th.

August 1820.

Days.	BAROMETER.						THERMOMETER (*exposed to a free current of air*)						RAIN GAUGE		HYGROMETER.						WINDS.	WEATHER, &c.
	Sun rise.	*10 o'clock.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*Sun rise.*	*10 o'clock.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*From Sun-rise to Sun set.*	*From Sun-set to Sun-rise.*	*Sun-rise.* Dry.	*10 o'clock* Dry.	*Noon.* Dry.	*2 o'clock.* Dry.	*Sun-set.* Dry.	*9 o'clock.* Dry.		
	inches.	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	deg.	inch.	inch.	d.	d.	d.	d	d.	d.		
1	30,005	30,050	30,060	29,988	29,965	30,015	79,0	81,2	80,5	81,5	81,0	82,0	0,7	0	7	7	7	6	7	7	Land & Calm.	Cloudy—thunder with rain
2	30,018	30,072	30,045	29,998	29,968	30,000	80,0	79,2	81,5	82,8	81,8	81,0	0	0	6	5	4	5	4	5	Variable	Cloudy—some rain with lightning
3	30,020	30,064	30,055	30,000	29,975	30,025	30,2	79,6	81,5	82,0	82.5	82,5	0	0	4	4	4	5	6	6	Land & S. E.	Cloudy—hazy with rain
4	30,018	30,055	30,048	30,020	30,000	30 015	80,5	81,4	82,5	83,0	82.0	81,5	0	0	5	4	6	8	9	8	Land	Clear—cloudy
5	30,010	30,040	30,015	......	29.968	29.975	80,0	81,6	82,5	....	82,0	82,0	2,7	0	7	6	7	0	7	7	S. W. & S. E	Clear—cloudy with rain
6	29,985	30,040	30,008	30,000	29.955	29,965	80,0	81,0	81,5	81,8	83,0	82,5	0	0	6	6	7	7	10	10	Land	Cloudy—hazy
7	29,985	30,045	30,035	30,020	29,988	30 015	80,0	81,0	82,5	84,2	81,5	81,0	0	0	8	10	11	13	11	10	Land & Calm.	Cloudy—lightning
8	30,008	30,020	30,025	29,975	29.945	29,945	79,8	80,2	82,0	83 0	82,0	81.0	2,5	0	7	8	10	10	10	10	Land	Cloudy with lightning
9	29.950	29,958	29.965	29,930	29.900	29,955	80,2	80,5	81,5	83,0	83,4	82,0	1,5	0	8	9	11	11	10	10	Land	Cloudy—hazy with lightning
10	29.965	30,015	30,005	30,000	29,935	29,965	79,5	81,0	82,6	84,3	83,0	82,5	0,4	0	6	8	11	12	10	10	Land	Cloudy—thunder with lightning
11	29,986	30,020	30,045	30,000	29.975	29,965	79,5	82,2	85.0	85,2	83,2	84,0	0	0	7	9	10	11	10	9	Land	Cloudy—rain
12	29 975	30,025	30,025	29,978	29,945	29,945	80,4	83,2	84,5	85,2	83.0	83,8	0	0	5	10	12	14	10	8	Land & S. E	Hazy—rain with lightning
13	29,987	30,015	30,025	30,000	29,945	29,955	80.5	82,5	84,5	84 6	84 5	84,0	1,2	0	7	7	9	9	10	11	Land	Cloudy—hazy
14	29,965	30,000	30,000	29,975	29,945	29,950	81,4	82,0	84,0	84,5	83,0	84,0	0	0	9	10	11	11	10	11	Land	Cloudy—some rain
15	29,965	29,978	29,974	29,935	29,925	29,920	80,4	81,5	83,0	84,0	83,0	83,0	0	0	9	8	11	11	10	9	Land	Cloudy—rain—halo round the Moon
16	29,945	29,955	29,945	29 900	29,888	29,865	81,0	83,8	86,2	89,5	87,2	84,5	0	0	12	15	16	18	19	17	Land	Hazy—some rain
17	29,915	29,925	29,920	29,882	29,875	29,855	80,2	83,8	86,7	88,5	83,5	85,0	0	0	15	16	19	20	21	20	Land	Cloudy—hazy
18	29,885	29,900	29.898	29,900	29,855	29,845	81,5	84,5	88.5	89,8	87,2	86,0	0	0	18	20	20	21	20	19	Land	Cloudy—hazy
19	29 845	29 878	29,875	29,846	29,800	29,800	80,5	85,5	89,8	87,8	88,0	87,2	0	0	16	18	20	21	20	21	Land & S. E.	Hazy—clear at times
20	29.866	29,930	29,945	29 918	29,855	29,900	81,0	87,2	90,2	93,0	85,5	85,0	0	0	19	20	21	22	16	14	Land & S. E.	Hazy—clear at times
21	29,972	30,000	30,000	29,955	29,935	29,915	81,0	87,2	91,0	94,0	85.6	84,4	0	0	10	14	20	24	18	14	Land	Clear
22	29.975	30,055	30,045	30,000	29,965	29,910	80,8	87.2	90 5	92,4	87,0	82,5	0	0	12	19	21	22	19	13	Variable	Clear—hazy
23	30.000	30,030	30,030	......	29,956	29,960	80 5	87,0	89,0	....	85,5	84,8	1.5	0	14	17	19	0	18	17	Variable	Hazy
24	29,986	30,026	30,028	29.978	29,945	29,948	83,0	88,4	89 8	90,8	82 6	83,0	0	2,0	14	18	21	22	14	16	Land	Clear—halo round the Sun—and also round the [Moon in the morning
25	29,975	30,015	30,010	29,998	29,955	29,966	82,4	86,0	88 8	89,2	87 5	85,5	0,2	0	15	17	19	20	19	17	Land & S. E.	Rain hazy—halo round the Moon
26	29,985	30,045	30,035	29,980	30,000	30.005	81,0	87,2	88,8	92 0	86,0	84,6	0	0	16	19	20	24	19	17	Land & S. E.	Clear—hazy with lightning
27	30,010	30,024	30,000	29,895	29,920	29,932	82,0	85,2	89,5	93,2	91.5	86,2	0	0	18	19	22	26	28	19	Land	Clear
28	29,960	29,968	29 955	29,910	29,898	29 910	81,2	87,2	89,2	92,0	87,0	84,5	0	0	20	21	25	25	25	24	Land	Clear—some rain
29	29.920	30,000	29,975	29,935	29,915	29 928	82,0	83 8	87,3	88,8	89.5	85,0	0	0	18	20	21	22	25	19	Land	Hazy
30	29,965	30,010	30,050	30,015	29,957	29,975	82.5	86 0	87,7	89,5	86,5	84,8	0	0	20	20	18	22	20	20	Land & S. E.	Clear
31	30,018	30,026	30.015	29,965	29 925	29.935	81,8	88.4	90 2	91,0	86,5	83,5	0	0	17	19	20	21	19	17	Variable	Clear—distant lightning

	Barometer.	Thermometer.
	Inches.	Degrees.
Greatest Height....	30.072	94,0
Least	29,800	79,0
Mean	29.936	86 5
Extreme Difference	00,272	15 0

	Rain.
	Inches.
Observed....	12,7
Reduced	3,175

	Hygrometer.
	Dry.
Greatest Height...	26,0
Least...........	4,0
Mean..........	15,0
Extreme Difference	22,0

PHASES OF THE MOON.

	D.	H.	M.
Last Quarter..........	1	11	10 M.
New Moon...........	9	3	2 M.
First Quarter	17	7	14 M.
Full Moon............	24	3	51 M.
Last Quarter..........	30	7	59 A.

In this Month

The Moon had receded to the greatest distance on the 10th.
The nearest approach of the Moon to the Earth was on the 24th.

September 1820.

Days.	BAROMETER.						THERMOMETER (*exposed to a free current of air.*)						RAIN GAUGE.		HYGROMETER.						WINDS.	WEATHER, &c.
	Sun rise.	*10 o'clock.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*Sun rise.*	*10 o'clock.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*From Sun rise to Sun set.*	*From Sun-set to Sun rise.*	Sun rise. Dry.	10 o'clock Dry.	Noon. Dry.	2 o'clock. Dry.	Sun set. Dry.	9 o'clock. Dry.		
	inches.	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	deg.	inch.	inch.	d.	d.	d.	d.	d.	d.		
1	29,955	29,970	29,978	29,935	29,900	29,920	81,2	87,8	90,8	92,5	88,2	84,8	0	0	16	18	21	24	22	21	Variable	Clear—hazy with lightning
2	29,945	30,000	29,975	29.935	29,930	29.960	82,0	87,4	91.5	92,0	86,5	85,2	0	0	18	19	20	20	20	18	Variable	Clear—hazy
3	29,980	30,025	30,010	29,975	29,935	29,965	79,0	83,7	89,2	90,5	87,5	82,2	0	0	18	17	19	20	18	19	W.	Hazy—cloudy with vivid lightning
4	30,000	30 020	30,008	29,940	29,945	29,940	83,2	90,5	91,2	90,5	85,2	84,0	0	0	16	18	19	16	17	17	Variable	Clear—hazy
5	29 975	30,000	30,010	29,945	29,915	29,965	82,0	88,0	90,2	91,6	85,2	84,0	0	0	16	17	19	20	16	15	Variable	Clear—cloudy with some rain
6	29,960	30,008	30,010	29,965	29,925	29,970	82,0	86,5	91,0	90,0	84,5	82,6	0	0	16	16	17	17	17	19	Variable	Clear—hazy
7	30,000	30.010	30,018	29,965	29,930	29,965	81,5	85,2	87,8	90,0	86,0	84,4	0,3	0	15	16	16	15	16	15	W. & S. E.	Hazy—some rain with vivid lightning
8	29,970	29.975	29 970	29 935	29.915	29 970	81,5	87,5	89,5	89.0	85,2	84,0	0	0	16	17	18	17	16	15	Variable	Hazy—some rain with vivid lightning
9	29,974	30.000	30,018	29.975	29.945	30,000	81.5	87,5	89,5	89,5	84,5	83,5	0	0	16	19	21	24	19	18	Variable	Clear
10	30.010	30,015	30,008	29,968	29,948	29,950	83,0	86,7	89,8	89,5	85,5	84,0	0	0	17	19	20	19	18	18	Variable	Mostly clear—vivid lightning
11	29,958	29,988	30,000	29,945	30,100	30,100	79,2	87,2	89,2	90,0	84,5	82,5	0	0	17	18	19	17	16	16	Variable	Clear—cloudy with lightning
12	30,025	30,025	30.018	30,010	30,000	29,975	82,4	83,5	84,8	86,4	82,5	81,5	0,5	0	16	15	16	15	15	14	Variable	Cloudy—some rain
13	29,975	30,018	30,000	29,965	29.945	29,930	80,0	81,2	85,0	80,8	80,0	79,5	0	1,2	14	13	14	14	13	12	W. & S. E.	Cloudy—some rain
14	29,915	29,965	29,955	29,925	29,910	29,915	78,0	81,5	83,3	85,0	83,0	81,5	0,4	0	10	6	7	8	7	7	W. & S. E.	Cloudy—some rain
15	29,935	30,000	30,008	29,978	29,945	29,965	78,8	85,2	88,2	89,2	83,5	83,0	0	0	7	10	16	19	16	14	Variable	Hazy
16	29,974	30,027	30,030	......	30,045	29,948	81,0	85,0	86,5	....	83,5	83,0	0,8	0	0	12	20	0	14	13	Variable	Cloudy—some rain
17	30,025	30,058	30,055	30,065	30,045	30,045	82,0	82,5	83,5	85,0	84,5	81,5	0	0	12	14	15	16	16	13	Variable	Clear—cloudy and some rain
18	30,015	30,025	30,026	30,034	30,015	30,010	81,0	82,6	86,4	86,6	84,4	83,0	0	0	10	12	14	16	14	12	Variable	Cloudy—hazy—halo round the Moon
19	29,976	30,045	30,055	30,045	30,045	30,020	80,4	84.5	86,2	88,2	86,0	84,5	0	0	14	17	19	20	19	15	Variable	Hazy—halo round the Moon
20	29,982	30,020	30,045	30,028	30,028	30.020	80,8	84,5	87,0	88,2	84,0	82,0	0	1,4	15	16	20	19	17	15	Variable & Calm	Cloudy—some rain
21	29,968	30,015	30,015	29,970	29,950	29,950	80,0	81 5	83,5	82,5	82,5	82,0	2,2	0	13	12	11	13	13	11	Calm & W.	Cloudy
22	29,945	30,000	30,000	29,975	29,956	29,958	80,0	82,4	86,0	85,2	84,8	83,5	0	0	13	13	14	14	14	14	Variable	Cloudy—hazy
23	29,965	30,016	30,010	30,015	30,020	30,050	79,8	84,5	87,2	89,0	87,0	86,6	0	0	14	15	16	19	23	21	Variable & Calm	Hazy—halo round the Sun & Moon
24	29.965	30,100	30,120	30,100	30,100	30,088	80,5	86,0	87,4	90,5	88,5	85,5	0	0	20	21	22	23	27	26	Variable & Calm	Clear—hazy
25	30,025	30.028	30,030	30,045	30,055	30,045	79,4	86,0	90,0	92,5	86,5	85,0	0	0	16	20	22	24	21	20	Variable	Clear
26	29.988	30,028	30,020	30,015	30,005	30,000	81,6	87,8	90,0	89,5	84,0	83,5	0	0	14	18	20	22	15	18	Variable	Cloudy—hazy
27	29,984	30,038	30,030	30,020	30,056	30,060	79,0	87,2	90,0	90,8	87,0	85,0	0	0	15	16	20	21	19	15	Variable	Clear—hazy
28	30.055	30,050	30,075	30,060	30,065	30,070	79,8	81,8	86,2	88,2	84,5	83,2	0	0	14	16	18	20	19	17	Variable	Cloudy—hazy
29	30,056	30,100	30,105	30,110	30,160	30,166	82,0	86,0	89,4	91,5	88,5	88,2	0	0	16	18	21	26	25	24	N. W.	Clear—hazy & lightning
30	30,146	30,148	30 148	30.150	30.173	30.200	81.0	87.5	91,2	91,8	89,2	87,0	0	0	16	20	22	26	22	21	West	Clear—lightning.

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height....	30,200	92,5
Least Height......	29,900	78,0
Mean..............	30,050	85,25
Extreme Difference..	00,300	14 5

	Rain. Inches.
Observed....	6,8
Reduced....	1,7

	Hygrometer. Dry.
Greatest Height....	27,0
Least..............	6
Mean	16½
Extreme Difference.	21,0

PHASES OF THE MOON.

	D	H.	M.
New Moon..................	7	7	13 A.
First Quarter..............	15	7	40 A.
Full Moon..................	22	0	9 A.
Last Quarter...............	29	8	23 M.

In this Month

The Moon had receded to the greatest distance on the 7th.

The nearest approach of the Moon to the Earth was on the 21st.

October 1820.

Days.	Barometer.						Thermometer (exposed to a free current of air.)						Rain Gauge.		Hygrometer.												Winds.	Weather, &c.
															Sun-rise.		10 o'clock		Noon.		2 o'clock.		Sun-set.		9 o'clock.			
	Sun rise.	10 o'clock.	Noon.	2 o'clock.	Sun set.	9 o'clock.	Sun rise.	10 o'clock.	Noon.	2 o'clock.	Sun set.	9 o'clock.	From Sun-rise to Sun-set.	From Sun-set to Sun-rise.	Dry.	Damp.	Dry.	Damp.	Dry.	Damp.	Dry.	Damp.	Dry.	Damp.	Dry.	Damp.		
	inches.	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	deg.	inch.	inch.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.		
1	30,138	30,150	30,200	30,085	30,200	30,210	84,0	88,5	91,8	93,3	89,2	86,5	0	0	19	0	23	0	26	0	28	0	27	0	22	0	N. W. and Calm.	Clear—lightning
2	30,118	30,118	30,117	30,178	30,238	30,230	82,5	87,0	91,5	92,4	91,0	87,2	0	0	18	0	22	0	29	0	32	0	34	0	26	0	S. W. N. W & Calm	Clear—hazy
3	30,088	30,125	30,140	30,167	30,200	30,200	78,4	87,5	91,0	91,2	87,8	85,2	0	0	16	0	24	0	29	0	27	0	29	0	27	0	W. N. W. & Calm.	Clear—hazy
4	30,145	30,148	30,140	30,140	30,160	30,145	80,2	88,5	90,5	92,8	86 6	85,2	0	0	23	0	22	0	25	0	29	0	27	0	23	0	S. W. and Calm.	Clear—hazy
5	30,045	30,050	30,050	30,050	30,045	30,040	80,5	86,5	92,2	89,2	86,5	84,8	0	0	17½	0	20	0	24	0	22	0	20	0	19	0	W. and S. E.	Clear—hazy
6	30,045	30,075	30,065	30,035	30,050	30,050	80,0	88,7	92,8	94,0	86,5	86,4	0	0	15	0	19	0	26	0	30	0	19	0	18	0	W. and S. E.	Clear—lightning
7	30,055	30,115	30,100	30,075	30,100	30,088	81,0	89,0	92,8	90,8	86,0	85,8	0	0	18	0	22	0	26	0	24	0	22	0	20	0	S. W. and S. E.	Clear—cloudy
8	30,082	30,170	30,135	30,100	30,088	30,100	83,0	87,2	89,8	89,8	84,5	83,5	0	0	16	0	19	0	21	0	24	0	21	0	21	0	S. W. and S. E.	Clear—cloudy
9	30,095	30,145	30,140	30,110	30,088	30,075	83,8	86,2	87,5	88,2	84,2	83,5	0	0	17	0	18	0	20	0	20	0	20	0	19	0	W. and S. E.	Cloudy—clear
10	30,085	30,130	30,155	30,074	30,045	30,075	83,0	87,2	87,5	88,5	85,0	83,5	0	0	18	0	19	0	21	0	22	0	21	0	20	0	N. W. and S. E.	Clear
11	30,085	30,130	30,125	30,120	30,065	30,100	82,5	89,0	90,5	92,8	83,5	83,6	0	0	18	0	20	0	22	0	24	0	20	0	19	0	S. E. by E.	Clear
12	30,078	30,120	30,115	30,045	30,045	30,038	81,4	85,6	90,0	89,5	85,5	83,5	0	0	17	0	19	0	20	0	20	0	21	0	20	0	N. W. and S. E.	Clear—distant lightning
13	30,064	30,125	30,100	30,045	30,065	30,055	82,0	86,2	91,5	90,6	86,2	84,5	0	0	18	0	20	0	20	0	21	0	20	0	20½	0	N. E.	Clear
14	30,075	30,135	30,130	30,080	30,075	30,100	80,0	86,4	90,8	90,0	86,5	84,4	0	0	19	0	20	0	22	0	23	0	22	0	22	0	N. E.	Clear
15	30,087	30,145	30,135	30,100	30,120	30,130	80,8	87,5	90,5	90,0	85,2	84,5	0	0	18½	0	20	0	21	0	23	0	21	0	21	0	N. E. by E.	Clear
16	30,118	30,145	30,125	30,120	30,125	30,130	80,0	86,0	89,8	88,2	85,6	84,4	0	0	17	0	19	0	20	0	22	0	21	0	21	0	N. E. by E.	Clear—halo round the Moon
17	30,015	30,120	30,110	30,100	30,075	30,100	80,5	83,8	85,0	86,5	84,0	82,5	0	0	18	0	17	0	18	0	17	0	19	0	19	0	N. W. and N. E.	Mostly cloudy
18	30,075	30,135	30,075	30,045	30,045	30,055	80,0	78,8	80,2	82,5	82,5	81,2	0	7,0	17,5	0	17	0	17	0	16	0	16	0	16	0	N. E.	Cloudy—rain
19	30,035	30,100	30,100	30,045	30,050	30,075	78,6	80,0	78,2	79,0	77,5	79,0	3,5	1,7	15	0	14	0	13	0	10	0	8	0	6	0	N. E.	Cloudy—rain
20	30,035	30,135	30,110	30,020	30,020	30,148	76,5	76,0	76,0	76,0	77,0	77,3	0,7	4,5	5	0	4	0	3	0	1	0	0	2	0	3	N. W. and N. E.	Cloudy—heavy rain
21	30,095	30,130	30,135	30,185	30,100	30,100	76,0	80,4	83,2	83,5	81,5	81,0	0	0	0	4	0	4	0	3	0	2	0	2	0	3	N. W. and N. E.	Hazy—clear
22	30,082	30,115	30,125	30,078	30,055	30,100	77,6	83,8	86,2	86,2	83,5	81,5	0	0	0	3	0	2½	0	1½	½	0	0	0	0	1½	N. W. and N. E.	Cloudy with lightning [thunder
23	30,065	30,135	30,125	30,100	30,065	30,080	78,0	82,4	85,0	86,2	82,4	80,6	0	0,5	0	1	0	1	½	0	½	0	0	1	0	½	N. W. and N. E.	Cloudy-rain with vivid lightg &
24	30,086	30,138	30,130	30,110	30,100	30,110	79,0	80,0	80,6	83,0	81,5	80,0	13,5	0	0	½	0	1½	0	1½	0	2	0	1	0	1	N. E. and Calm.	Cloudy—rain dew at night
25	30,098	30,135	30,135	30,110	30,110	30,120	76,0	82,4	86,2	86,0	82,5	81,5	0	0	0	½	½	0	½	0	4	0	8	0	8	0	Calm and N. E	Clear—dew at night
26	30,115	30,135	30,135	30,120	30,110	30,135	76,6	83,0	87,4	85,7	84,0	78,0	0	0	5	0	5½	0	9½	0	15	0	14	0	11	0	Calm and N. E.	Clear—heavy rain
27	30,118	30,140	30,140	30,155	30,128	30,140	77,7	82,2	85,0	85,2	82,6	80,2	0	0	9	0	9	0	12	0	15	0	15½	0	14	0	N. E.	Mostly clear
28	30,126	30,165	30,145	30,140	30,128	30,135	76,6	81,4	85,0	86,2	83,2	82,0	0	0	11½	0	11	0	12	0	13½	0	13	0	11½	0	N. W. and N. E.	Hazy
29	30,118	30,145	30,138	30,115	30,118	30,124	78,0	83,4	84,0	85,2	83,7	81,5	0	0	8	0	8	0	10	0	13	0	13½	0	11	0	Fresh N. E.	Cloudy
30	30,108	30,130	30,128	30,100	30,050	30,100	79,0	79,5	80,2	80,2	80,0	78,2	0	9,0	7	0	0	1	0	2	0	2½	0	2½	0	2½	N. E. and N. W.	Cloudy—rain
31	30,076	30,148	30,140	30,110	30,100	30,085	79,0	80,0	82,4	80,2	79,4	79,0	6,2	2,5	0	3½	0	4½	0	1	0	4	0	3½	0	4	N. E.	Cloudy—rain

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height	30,238	94,0
Least	30,015	76,0
Mean	30,1265	85 0
Extreme Difference	00,223	18 0

Rain.
Inches.
Observed..49,1
Reduced..12,28

Hygrometer.	Dry. Deg.	Damp. Deg.
Greatest Height.....	34 0	4 5
Least Height......	00,5	0,5
Mean..............	17,25	2,5
Extreme Difference.	33,5	4.0

PHASES OF THE MOON.

	D.	H.	M.	
New Moon	7	0	35	A.
First Quarter	15	6	13	M.
Full Moon	21	9	37	A.
Last Quarter..	29	0	48	M.

In this Month.

The Moon had receded to the greatest distance on the 4th.
The nearest approach of the Moon to the Earth was on the 19th

November 1820.

Days.	Barometer. Sun rise.	Barometer. 10 o'clock.	Barometer. Noon.	Barometer. 2 o'clock.	Barometer. Sun set.	Barometer. 9 o'clock.	Thermometer (exposed to a free current of air) Sun rise.	Thermometer 10 o'clock.	Thermometer Noon.	Thermometer 2 o'clock.	Thermometer Sun set.	Thermometer 9 o'clock.	Rain Gauge. From Sun-rise to Sun set.	Rain Gauge. From Sun-set to Sun rise.	Hygrometer. Sun rise. Dry.	Sun rise. Damp.	10 o'clock Dry.	10 o'clock Damp.	Noon. Dry.	Noon. Damp.	2 o'clock. Dry.	2 o'clock. Damp.	Sun set. Dry.	Sun set. Damp.	9 o'clock. Dry.	9 o'clock. Damp.	Winds.	Weather, &c.
	inches.	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	deg.	inch.	inch.	d.	d.	d.	d.	d.	d.	d.	d.	d	d.	d.	d.		
1	30,075	30,145	30,140	30,100	30,110	30,180	78,8	80,5	85,5	86,0	83,0	82,0	0,2	0	0	5	0	5	0	5	0	4½	0	4	0	4	N. E. & Calm	Clear—lightning—rain
2	30,122	30,200	30,170	30,135	30,110	30,120	79,5	82,0	84,2	86,5	84,2	83,2	2,5	0	0	4	0	4	0	3½	0	3	0	½	0	1½	N. E. & Calm	Clear—cloudy—dew
3	30,126	30,200	30,188	30,135	30,125	30,125	80,2	86,0	89,2	88,0	84,6	82,5	0	0	0	2	0	2	0	1	3	0	3½	0	4	0	Calm E.	Clear
4	30,115	30,155	30,150	30,115	30,100	30,110	79,5	83,5	88,3	87,5	84,5	81,5	0	0	½	0	½	0	2½	0	3	0	6	0	6	0	E. S. E.	Clear
5	30,118	30,155	30,160	30,118	30,135	30,138	79,4	84,5	86,8	87,0	84,0	82,5	0	0	3	0	4	0	5	0	7	0	11	0	10	0	N. E.	Clear
6	30,125	30,175	30,168	30,145	30,140	30,160	77,4	84,6	85,5	85,3	83,0	80,4	0	0	7	0	7	0	11	0	13	0	15	0	16	0	Variable	Clear
7	30,168	30,200	30,200	30,200	30,200	30,172	76,5	82,0	85,8	85,5	83,0	79,0	0	0	10	0	10½	0	14	0	15	0	15½	0	15	0	Variable	Clear
8	30,178	30,210	30,200	30,188	30,178	30,187	75,5	84,2	86,5	86,0	83,0	80,4	0	0	10	0	11½	0	14	0	16	0	17	0	16	0	S. E. by E.	Clear
9	30,188	30,200	30,210	30,188	30,200	30,188	76,0	81,5	85,0	84,2	83,0	80,4	0	0	11½	0	11	0	13	0	14	0	14½	0	13½	0	N. E. by E.	Clear
10	30,176	30,235	30,228	30,200	30,175	30,178	77,0	82,6	85,5	86,0	83,2	82,0	0	0	9½	0	8	0	8	0	11	0	11½	0	11½	0	N E & E by N	Cloudy—some rain
11	30,175	......	30,235	30,218	......	......	81,0	....	87,5	85,4	....	....	0	0	11	0	0	0	15	0	13	0	0	0	0	0	N. E & E.	Clear
12	......	......	30,235	30,210	30,220	30,205	....	....	84,4	83,8	83,5	81,5	0	0	0	0	0	0	14	0	13	0	14	0	12½	0	E. by N.	Cloudy—some rain
13	30,145	30,185	30,175	30,138	30,135	30,165	82,0	83,3	81,0	78,0	77,5	78,4	0	2,0	10	0	9½	0	9	0	9	0	7½	0	8	0	N. E.	Cloudy—some rain
14	30,142	30,200	30,210	30,168	30,135	30,165	78,8	78,8	77,5	82,6	80,5	78,4	0	3,5	6	0	4	0	3½	0	1½	0	1½	0	1½	0	N E.	Cloudy—rain
15	30,135	30,200	30,185	30,145	30,125	30,130	77,5	79,0	82,4	83,0	79,4	79,2	3,0	0,3	½	0	½	0	1	0	2	0	2	0	3	0	N. E.	Cloudy—rain
16	30,124	30,145	30,155	30,118	30,130	30,138	79,2	82,5	85,2	84,6	83,0	82,0	0,2	0	1½	0	1½	0	3	0	3½	0	4	0	6	0	N. & E.	Hazy—halo round the Moon
17	30,135	30,210	30,215	30,200	30,165	30,170	81,0	82,0	85,5	86,0	83,0	81,0	0	0	6	0	7	0	9½	0	11½	0	14	0	15	0	N. E.	Hazy
18	30,165	30,200	30,185	30,142	30,115	30,120	78,4	82,2	85,0	79,4	79,4	80,0	0	2,0	10½	0	8	0	8	0	6	0	5	0	5	0	N. E.	Cloudy—rain
19	30,130	30,200	30,185	30,135	30,125	30,110	77,5	80,0	80,5	82,5	81,8	79,5	0,4	0	4	0	4½	0	5	0	5½	0	5	0	4	0	N. E.	Cloudy—rain
20	30,110	30,132	30,135	30,125	30,100	30,120	79,0	84,5	85,4	83,5	80,0	78,0	0	0	5	0	9	0	11	0	12	0	10	0	10	0	N. E.	Cloudy—rain
21	30,116	30,145	30,145	30,125	30,110	30,085	75,5	79,5	83,5	83,0	80,0	78,5	2,5	0	5½	0	6	0	7	0	9	0	11	0	9½	0	N. E.	Clear
22	30,088	30,145	30,145	30,086	30,088	30,075	75,0	81,2	83,0	82,5	81,2	80,0	0	0	7	0	7	0	7	0	8	0	9	0	9	0	N. E.	Mostly clear
23	30,075	30,120	30,130	30,110	30,076	30,110	75,4	79,5	81,2	82,6	80,0	78,5	0	0	7	0	7	0	7½	0	10	0	12	0	12	0	N. E.	Mostly clear
24	30,092	30,145	30,135	30,130	30,128	30,145	75,5	81,0	83,2	83,0	80,7	87,8	0	0	10	0	13	0	15	0	15½	0	15	0	13	0	N. E.	Mostly clear
25	30,095	30,130	30,135	30,110	30,085	30,110	75,2	80,0	80,4	81,0	80,0	78,5	0	0	7	0	8	0	9	0	6	0	11	0	10	0	N. E.	Clear
26	30,096	30,145	30,140	30,115	30,118	30,140	75,6	80,0	84,0	82,0	79,4	78,2	0	0	7	0	8	0	11	0	12	0	13	0	13	0	N. E.	Clear
27	30,135	30,165	30,155	30,155	30,140	30,180	73,4	79,0	82,2	82,0	80,0	79,0	0	0	9	0	10	0	13	0	15	0	15	0	14½	0	N. E.	Clear
28	30,178	30,200	30,210	30,220	30,200	30,188	74,0	78,4	82,0	81,4	79,6	78,0	0	0	10	0	10½	0	13	0	15	0	15½	0	15	0	N. E.	Hazy
29	30,215	30,220	30,215	30,210	30,185	30,210	74,0	78,0	81,2	81,0	78,3	78,0	0	0	12	0	11	0	14	0	17	0	19	0	19	0	N. E.	Hazy
30	30,184	30,200	30,188	30,155	30,130	30,135	73,0	76,2	78,7	78,2	77,0	76,7	0	0	15	0	17	0	16	0	14	0	14½	0	13½	0	Fresh N. E.	Cloudy—rain

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height	30,235	89,2
Least	30,075	73,0
Mean	30,155	81,1
Extreme Difference	00,160	16,2

	Rain. Inches.
Observed	16,6
Reduced	4,15

	Hygrometer. Dry. Deg.	Hygrometer. Damp. Deg.
Greatest Height ..	19 0	5,0
Least	0,5	1,0
Mean	9,75	3
Extreme Difference	18,5	4,0

PHASES OF THE MOON.

	D.	H.	M.
New Moon	6	5	44 M.
First Quarter	13	3	17 A.
Full Moon	20	8	35 M.
Last Quarter	27	8	45 A.

In this Month

The Moon had receded to the greatest distance on the 1st.
The nearest approach of the Moon to the Earth was on the 16th;

December 1820.

Days.	Barometer.						Thermometer. (exposed to a free current of air.)						Rain Gauge.		Hygrometer.												Winds.	Weather, &c.
	Sun rise.	10 o'clock.	Noon.	2 o'clock.	Sun set.	9 o'clock.	Sun rise.	10 o'clock.	Noon.	2 o'clock.	Sun set.	9 o'clock.	From Sun-set to Sun-rise.	From Sun-rise to Sun-set.	Sun-rise.		10 o'clock		Noon.		2 o'clock.		Sun set.		9 o'clock.			
															Dry.	Damp.	Dry.	Damp.	Dry.	Damp.	Dry.	Damp.	Dry.	Damp.	Dry.	Damp.		
	inches.	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	deg.	inch.	inch.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.		
1	30,035	30,055	30,038	30,015	29.975	29,970	73,0	75,0	74,0	74,4	75,4	78,0	1,8	0,2	6	0	7	0	6½	0	5½	0	3	0	2	0	Fresh N. E.	Cloudy—rain
2	29,955	29.985	29,978	29.938	29,920		77,0	77,0	77,3	77,0	77,0	....	5,0	4,5	0	3	0	5	0	6	0	6	0	6	0	0	Fresh N. E.	Heavy rain
3	29,848	29,845	29,775	29,664	29,700		76,0	76,0	75,2	74,0	73,3	....	6,5	27,0	0	7	0	9	0	10½	0	14	0	8½	0	0	Storm N E.	Heavy rain
4	29.945	30,038	30,038	30,030	30,015	30,030	73,0	74,0	75,6	76,0	75,6	75,2	3,5	0	0	13½	0	13	0	11½	0	11	0	9½	0	9	North W.	Cloudy
5	30,065	30,125	30,130	30,078	30,068	30,100	72,4	76,5	78,5	82,7	79,4	77,2	0	0	0	9	0	8	0	4	0	2	0	3	0	4	Variable.	Clear
6	30,075	30,138	30,140	30,105	30,075	30,088	76,0	79,2	83,3	83,5	81,0	78,5	0	0	0	6½	0	8	0	7	0	7	0	6½	0	6½	Variable.	Mostly clear
7	30,078	30.138	30,135	30,115	30,085	30,125	76,4	80,4	85,0	84,0	80,4	77,2	0	0	0	8	0	9	0	6	0	7	0	3½	0	3	N. E.	Clear—cloudy
8	30,117	30,168	30,185	30,145	30,138	30,165	76,0	83,0	86,5	85,0	81,0	77,0	0	0	0	5	0	5	0	½	5	0	7	0	5½	0	N. E.	Clear
9	30,145	30,220	30,188	30,145	30,150	30,130	75,7	79,5	78,5	80,3	78,2	75,5	0	0	3	0	2	0	4	0	4½	0	6	0	5½	0	E by N.	Cloudy
10	30,112	30,155	30,150	30,112	30,106	30,120	74,0	81,8	83,4	84,4	79,3	77,0	0	0	3	0	2	0	4	0	7	0	7	0	8	0	N. E.	Clear—hazy
11	30,075	30,135	30,130	30,085	30,058	30,118	73,0	80,2	82,8	83,0	78.5	75,6	0	0	4	0	4½	0	9½	0	11	0	11½	0	12½	0	N. E.	Mostly clear
12	30.108	30,148	30,150	30,134	30,125	30,134	72,0	79 0	81,8	80,0	78,8	78,0	0	0	8	0	8	0	9	0	11	0	10½	0	10	0	N. E.	Thick haze
13	30,124	30,148	30,158	30,118	30,100	30,110	75,0	77,2	78,4	80,4	78 8	76,4	0	0	5	0	2	0	2	0	1½	0	½	0	½	0	N. E.	Cloudy—rain
14	30,070	30,135	30,125	30,070	30,058	30,100	77,0	81,8	84,3	83,5	80,2	79,0	0,2	0	0	1	0	2	0	1	1	0	1½	0	2	0	N. E. & E.	Hazy
15	30,085	30,148	30,155	30,120	30,108	30,110	77,7	84 2	84.8	83,0	81,0	79,5	0	0	1½	0	1½	0	2	0	3	0	4	0	4½	0	N. E. & E.	Hazy
16	30,128	30,158	30,165	30,128	30,120	30,125	75,8	78,8	85 4	84,7	81,0	79,5	0	0	1	0	2	0	4½	0	7	0	9	0	8½	0	E.	Hazy
17	30,130	30,185	30,168	30,135	30,112	30,135	74,5	82,2	84,2	84,0	80,8	79,2	0	0	4	0	4	0	6	0	6	0	7	0	6½	0	N. E. by E.	Hazy
18	30,125	30,145	30,146	30,115	30,085	30,110	78,5	79.8	84,5	83,4	81.5	78.5	0	0	5½	0	4	0	7½	0	10½	0	10	0	11	0	N. E.	Hazy
19	30,088	30,135	30,135	30,115	30,110	30,115	77,2	79.5	82,0	81,4	79,5	78,5	0	0	9	0	12	0	15½	0	16	0	16	0	15½	0	N. E & E by N.	Hazy
20	30,105	30,115	30,100	30,065	30,040	30,045	76,4	76,6	78,4	79,0	76.5	76,7	0	0	10½	0	9½	0	10	0	9	0	7	0	7	0	N. E. by E.	Cloudy—rain
21	30,025	30,045	30,028	30,000	29,955	29,952	75,0	75,0	77,0	78,2	77,0	76,8	4,0	7,0	3	0	2	0	0	2	0	4	0	6	0	7	E. & E. by N.	Cloudy—heavy rain
22	29,930	29,958	29,955	29,900	29,813		74,2	76,4	77,5	76,3	76,5	....	13,0	2,5	0	6	0	6	0	10	0	12½	0	14½	0	0	Fresh N. E. gale	Cloudy—rain bow
23	29,958	30,035	30,040	30,000	30,000	30,025	74,5	75,5	77,2	79,0	77,2	77,0	1,0	0	0	11	0	11	0	9	0	7½	0	5	0	6	N W.	Cloudy
24	30 020	30,058	30,050	30,035	30,008	30,025	74,4	76,0	77,2	77,0	76,5	75,5	0	0	0	7	0	8	0	8	0	7½	0	8	0	9	Fresh N. W.	Cloudy
25	30,020	30,075	30,070	30,045	30,025	30,048	74 5	77,0	83.5	82,5	80,2	78,2	0,5	0	0	12	0	11	0	13½	0	12	0	12½	0	12	N. E.	Hazy—some rain
26	30,025	30,100	30 088	30,045	30,028	30,058	78,5	81,4	84,0	84,6	81,5	84.0	0	0	0	12	0	13	0	11½	0	9	0	9	0	9	N. E.	Hazy
27	30,055	30,085	30,100	30,055	30 035	30,076	78,0	81,8	86,2	84 0	81,5	79,2	0	0	0	11	0	10	0	9	0	7½	0	6	0	6	N E.	Hazy
28	30,088	30,140	30,135	30,088	30.055	30,078	77,0	82 6	85,5	84,0	81.4	78,5	0	0	0	6	0	5	0	2½	0	0	1	0	2½	0	N E.	Clear
29	30.135	30,125	30,140	30,115	30,105	30,110	78,2	83,0	85 0	83 4	80,7	79,2	0	0	1	0	3½	0	6	0	6	0	6	0	5	0	N. E.	Clear—hazy
30	30,105	30,135	30,130	30,078	30,068	30,100	77,5	80.7	82,7	81,2	79,2	79,0	0	0	5	0	6	0	7	0	8	0	9	0	9½	0	Fresh N. E.	Hazy
31	30,068	30,100	30,078	30.055	30.124	30.020	76,0	77,2	78 0	76,5	74 5	74,0	0	0	9	0	8½	0	9	0	9	0	6	0	5	0	Fresh N. E.	Cloudy—some rain

	Barometer. Inches.	Thermometer. Degrees.
Greatest Height....	30,220	86 5
Least..........	29.664	72,0
Mean..........	29,942	79,25
Extreme Differences.	00,556	14 5

	Rain Inches.
Observed..	76,7
Reduced..	19,175

Hygrometer.	Dry. Deg.	Damp. Deg.
Greatest Height	16,0	18,5
Least..........	00,5	00,5
Mean..........	8,25	9,25
Extreme Difference..	15,5	18,0

PHASES OF THE MOON.

	D.	H.	M.	
New Moon..................	5	9	31	A.
First Quarter..................	12	11	26	A.
Full Moon..................	19	9	26	A.
Last Quarter..................	27	6	37	A.

In this Month

The nearest approach of the Moon to the Earth was on the 13th.

The Moon had receded to the greatest distance on the 26th.

*T*ABLE *of the* MEAN, GREATEST, *and* LEAST *Heights; with the* EXTREME DIFFERENCES, *of the* BAROMETER, *and* THERMOMETER *exposed; together with the* FALL *of* RAIN, *at the* MADRAS OBSERVATORY *in the year* 1820.

MONTHS.	BAROMETER.				THERMOMETER. (*exposed to a free current of air*)				RAIN GAUGE.	
	Mean.	*Greatest.*	*Least.*	*Extreme difference.*	*Mean.*	*Greatest.*	*Least.*	*Extreme difference.*	*Observed.*	*Reduced.*
	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	inches.	inches.
January	30,0460	30,185	29,907	60,278	75 70	82 2	69,2	13,0	”	”
February	30,0600	30,185	29,945	00,240	78,40	86,8	70,0	16,8	”	”
March	29,8850	30,210	29,560	00,250	79 65	89,3	70,0	19,3	27,0	6,75
April	29 9875	30,120	29,855	00 265	85,40	92,2	78.6	13,6	2,0	0.5
May	29,3850	30,100	28 670	01,430	86,10	98,2	74,0	24,2	68,7	17,175
June	29,9075	30,120	29,785	00,335	88,30	96 0	80,6	15,4	3,4	0,85
July	29,9550	30,115	29,795	00,320	87,40	97,0	77,8	19,2	14,1	3,525
August	29,9360	30,072	29,800	00,272	86,50	94,0	79,0	15,0	12,7	3,175
September	30,0500	30,200	29 900	00 300	85,25	92,5	78,0	14,5	6,8	1,7
October	30,1265	30,238	30,015	00,223	85,00	94,0	76,0	18,0	49,1	12,28
November	30,1212	30,235	30,075	00,160	81,37	89,2	73,0	16,2	16,6	4,15
December	30 0704	30,220	29 664	00,556	78 90	86.5	72 0	14 5	76,7	19,175

	BAROMETER.	THERMOMETER EXPOSED.	RAIN GAUGE.	
			Observed	*Reduced.*
	inches.	degrees.	inches.	inches.
General Mean	29,96084	83,164		
Greatest Height	30,238	98,2	277,1	69,275
Least Height	29,560	69,2		
Extreme Difference	00,678	29,0		

During the Year 1820.

The Moon was nearest to the Earth on the 13th February and 24th of August.

The Moon was at the greatest distance from the Earth on the 27th of February and 10th of August.

The Medium Height of the Thermometer for 5 Years before the year 1815 was 83,8°. The Medium Height for the 5 years from 1816 to 1820 inclusive was 82,6°; the difference nearly a degree and a quarter.

The Medium Height of the Barometer for the first 5 years, and that for the last, were exactly the same—being 29,96 Inches.

MADRAS OBSERVATORY,
January 1821.

JOHN GOLDINGHAM,
SUPT. OF THE OBSERVATORY.

METEOROLOGICAL TABLES.

PART VII.

METEOROLOGICAL JOURNAL

KEPT IN THE

MADRAS OBSERVATORY

IN THE YEAR 1821.

January 1821.

Days	Barometer.						Thermometer. (*exposed to a free current of air.*)						Rain Gauge.		Hygrometer.												Winds.	Weather, &c.
	Sun rise.	*10 o'clock.*	*Noon.*	*2 o'clock.*	*Sun-set.*	*9 o'clock.*	*Sun rise.*	*10 o'clock.*	*Noon.*	*2 o'clock.*	*Sun-set.*	*9 o'clock*	*From Sun-rise to Sun-set.*	*From Sun-set to Sun-rise.*	*Sun rise.*		*10 o'clock*		*Noon.*		*2 o'clock.*		*Sun-set.*		*9 o'clock.*			
															Dry.	*Damp.*	*Dry.*	*Damp.*	*Dry.*	*Damp.*	*Dry.*	*Damp.*	*Dry.*	*Damp.*	*Dry.*	*Damp.*		
	inches.	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	deg.	inch.	inch.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.		
1	30,000	30.030	30,008	29,975	29,948	29,958	73,5	74,5	76,0	75,5	76,0	75,5	0,5	1,5	1	0	o	1½	o	6½	o	7½	0	9	0	9½	Fresh N. Easterly	Cloudy—rain
2	29,925	29,970	29,970	29,928	29.920	29,938	75,0	74,5	73,8	73.3	73,8	74,2	4,5	3,0	o	10½	o	11½	o	11½	o	11½	0	11	0	10½	Fresh N. W.	Cloudy—rain
3	29 988	30,072	30,070	30,045	30,000	30,028	72,8	75,2	77,5	79,0	77,5	75,5	o	o	o	4	o	4	o	3½	o	3	0	3	0	4	Fresh N by E & NE	Hazy—clear
4	30,035	30,125	30,100	30,065	30,035	30,065	74,2	78,0	83,5	82,2	78,0	75,5	o	o	o	6	o	7	o	6	o	3½	½	0	0	½	N. E.	Clear
5	30,100	30,160	30,155	30,125	30,120	30,128	75,5	78,0	81,5	81,2	79,2	77,2	o	o	o	4½	o	6	o	4	o	4	0	2	0	3	N. E.	Mostly hazy
6	30,130	30,200	30,188	30,148	30,138	30,138	76,0	78,0	84,0	83,3	79,0	75,5	o	o	o	3	o	3½	o	1	2½	0	7	0	3½	0	Fresh N. E.	Clear
7	30,130	30,200	30,175	30,145	30,135	30,150	75,0	76,8	80,0	79,5	77,5	77,2	o	2,5	o	½	o	3	o	8½	o	4	0	6	0	7	N. E.	Cloudy—rain
8	30,175	30,234	30,215	30,178	30,165	30,166	77,0	80,5	83,5	79,8	76,2	76,5	1,5	0,7	o	7½	o	7½	o	8	o	7	0	7	0	7	N. E.	Cloudy—rain
9	30,188	30,238	30,240	30,208	30,200	30,205	76,5	80,5	82.5	81,2	79,2	77.5	o	o	o	6	o	6	o	4½	o	3	0	2	0	1	N. E.	Mostly clear
10	30,188	30,244	30,235	30,200	30,168	30,188	72,5	80,0	83,3	81,5	79,0	77,2	o	o	1½	o	o	1½	o	½	o	o	0	1	0	3	N. E.	Clear
11	30,203	30,265	30,270	30,235	30,215	30,218	74,2	79,4	82,8	81,2	78,2	75,8	o	o	1	o	2	o	5	o	6	o	6	o	7	o	N. E.	Clear
12	30,210	30,255	30,260	......	30,220	30,200	75,0	81,0	84,0	....	82,0	76,6	o	o	6	o	7	o	8½	o	o	o	9	o	10	o	N. E.	Clear
13	30,218	30,240	30,240	30,215	30,208	30,200	74,5	78,0	84,5	83,0	78,4	77,2	o	o	7	o	7	o	7	o	6	o	7	o	7	o	N. E.	Clear—dew
14	30,215	30,255	30,248	30,235	30,200	30,200	75,5	81,0	83,0	82,5	78,5	77,5	o	o	6	o	5	o	7	o	7	o	7	o	8½	o	N. E.	Clear
15	30,204	30,245	30,235	30,205	30,200	30,165	74,5	80,4	84,3	83,0	80,0	78,2	o	o	6	o	5½	o	6½	o	7	o	7½	o	7½	o	N. E. & Calm	Clear—hazy—dew
16	30,158	30,235	30,215	30,158	30,155	30,160	75,0	80,2	82 5	82,5	80,0	77.5	o	o	6½	o	5	o	7	o	9	o	8½	o	9	o	N. E. & Calm	Clear—hazy—dew
17	30,158	30,235	30,225	30,258	30,188	30,175	74,0	83,4	84,6	83,5	80,0	77,2	o	o	7	o	7½	o	8	o	8½	o	9	o	10	o	Calm E. & N. E.	Clear—dew
18	30,205	30,245	30,235	30,208	30,188	30,200	75,0	81,2	83,5	82,5	79,5	78.2	o	o	8	o	7	o	9	o	9	o	7	o	7	o	E. by S. & E.	Cloudy—clear—dew
19	30,155	30,200	30,200	30,165	30,155	30.156	77,2	81,0	81,2	81,5	80.0	79,2	o	o	4	o	2	o	2	o	3	o	2	o	3	o	Calm & E. by S.	Cloudy—some rain
20	30,165	30,200	30,215	30,145	30,134	30,130	78,0	82,2	83,8	83,2	80,0	79.5	0,2	o	2	o	2	o	3½	o	4	o	5	o	5	o	E.	Hazy—cloudy
21	30,142	30,185	30,200	30,165	30,138	30,128	76,0	83,5	84,4	82,5	79.5	77,5	o	o	6	o	8	o	10	o	11	o	12	o	11½	o	E.	Clear—dew
22	30,135	30,165	30,150	30,135	30,130	30,118	75,2	81,8	84,2	83,4	80,5	78,0	o	o	7½	o	6	o	8	o	9	o	9	o	8½	o	N. E.	Clear—hazy
23	30,150	30,144	30,145	30,115	30,110	30,120	78,5	83,0	83,4	83,0	80,6	78,5	o	o	9	o	9	o	11	o	12	o	11½	o	11	o	N E.	Clear
24	30,148	30,155	30,138	30,100	30,055	30,080	76,0	83,2	85 4	84,5	80,0	78,0	o	o	10	o	10½	o	12	o	12	o	12	o	11½	o	E. by S. & E.	Hazy—clear—dew
25	30,135	30,145	30,140	30,105	30,088	30,100	76,8	82,2	85,0	84,5	80,5	79,2	o	o	10½	o	7	o	9	o	10	o	10	o	10	o	N. E.	Clear—hazy at night
26	30,100	30,145	30,138	30,100	30.100	30,118	75,0	80,0	83,4	81,8	79,0	78.8	o	o	7	o	7	o	9	o	9	o	10	o	10½	o	N. E.	Hazy—cloudy
27	30,110	30,200	30,188	30,135	30,105	30,115	76,0	80,2	83,0	83,0	79,2	78,2	o	o	9½	o	10	o	10½	o	9½	o	9	o	9½	o	N. E.	Hazy
28	30,100	30,155	30,135	30,140	30,050	30,100	77,0	79,8	83,2	84 0	80,5	78,5	o	o	8	o	7	o	9	o	9½	o	9½	o	9	o	N. E. & Calm	Cloudy—clear—dew
29	30,068	30,135	30,115	30,075	30,048	30,050	72,5	79,2	85,5	83,0	81,0	77,8	o	o	8	o	8½	o	9	o	10	o	9½	o	9	o	Light N. E.	Clear—dew
30	30,040	30.110	30,100	30,045	30,015	30,035	70,8	80,0	84,4	85,2	80,5	77,8	o	o	9	o	9	o	10	o	11½	o	9	o	12	o	Calm & S. W.	Clear—heavy dew
31	30.030	30 100	30 068	30,018	30,000	30.005	74,0	80,2	82,5	84,0	78.5	77,3	o	o	10	o	8	o	11	o	11½	o	10½	o	8½	o	S. E.	Thick hazy—clear

	Barometer. Inches.	Thermometer. Degrees.
General Mean....	30,10803	79,401
Greatest Height..	30,270	85,5
Least..........	29,920	70,8
Extreme Difference	00,250	14,7

	Rain. Inches.
Observed..	14,4
Reduced..	3,6

Hygrometer	Dry. Deg.	Damp. Deg.
Greatest Height...	12,0	11,5
Least..........	00,5	00,5
Mean..........	06,25	06 0
Extreme Difference	11,5	11,0

PHASES OF THE MOON.

	D.	H.	M.	
New Moon..................	4	11	33	M.
First Quarter..............	11	7	25	M.
Full Moon..................	18	0	35	A.
Last Quarter...........	26	4	3	A.

In this Month

The nearest approach of the Moon to the Earth was on the 7th.
The Moon had receded to the greatest distance on the 23d.

February 1821.

Days.	BAROMETER.						THERMOMETER. (*exposed to a free current of air.*)						RAIN GAUGE.		HYGROMETER.						WINDS.	WEATHER, &c.
	Sun rise.	*10 o'clock.*	*Noon.*	*2 o'clock.*	*Sun-set.*	*9 o'clock.*	*Sun rise.*	*10 o'clock.*	*Noon.*	*2 o'clock.*	*Sun-set.*	*9 o'clock*	*From Sun-rise to Sun-set.*	*From Sun-set to Sun-rise.*	*Sun rise.* Dry.	*10 o'clock* Dry.	*Noon* Dry.	*2 o'clock.* Dry.	*Sun-set.* Dry.	*9 o'clock.* Dry.		
	inches.	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	deg.	inch.	inch.	d.	d.	d.	d.	d.	d.		
1	30,000	30,078	30,055	30,028	30 005	30,020	74,5	80,8	84,5	84,8	80 3	77,5	0	0	8½	7	10	10	10	10	S. E.	Clear—heavy dew
2	30,025	30,100	30,088	30,065	30,045	30,028	74,8	83,0	87,5	85,2	80,6	77,2	0	0	10	10	11½	12	13	12½	Calm S. E & N. E.	Hazy clear—dew
3	30,058	30,128	30.130	30,125	30,105	30,125	74,0	83,5	84,5	87,0	80,5	77.2	0	0	11	11½	12	13	13	12½	E. and N. E.	Mostly clear—dew
4	30,115	30,225	30,205	30,155	30,148	30,168	74,8	80,0	83,4	83.5	80,5	78,0	0	0	11½	10	12	12	12	11½	N. E.	Hazy clear—dew
5	30,155	30,200	30,200	30,155	30,130	30,125	76,0	80,2	85,2	84,5	80,6	77,5	0	0	11½	12	12½	12½	13	13	N. E.	Clear—dew
6	30,105	30,165	30,168	30,138	30,100	30,125	71,1	79,0	84,0	83,3	78,0	76,0	0	0	12½	12	13	12	12½	12	Light N. E & S. E.	Clear—heavy dew
7	30,137	30,200	30,188	30,145	30,144	30,148	71,0	79,2	83.3	83,6	80,5	75,5	0	0	12	12½	13½	14	14	13½	Calm and Light E.	Clear—dew
8	30,156	30,220	30.210	30,160	30,135	30,145	71,5	80,0	85,5	83,8	79,2	74,5	0	0	12	13	13	33	29	27	S W. and S. E.	Clear—dew
9	30,155	30,235	30,206	30,148	30,138	30,145	70,5	78,8	83,8	83,4	80,2	73,5	0	0	20	20	23	26	25	23	Calm & S. E.	Clear—dew
10	30,158	30,244	30,220	30,220	30,165	30,200	73,0	78,0	83,5	83,0	79,4	76,0	0	0	20½	20	21½	22	21	20	Calm & S. E.	Clear—dew
11	30.202	30,255	30,250	30,220	30,200	30,200	71,0	80 4	83 5	84,5	80,0	77,0	0	0	18	15	17	18	17½	17	Calm & S. E.	Clear—heavy dew
12	30 215	30,144	30,255	30,225	30,220	30,215	72,0	81,4	83,3	82,5	80,3	77,0	0	0	15	11	12	12	12½	12	Calm & N. E.	Clear—dew
13	30,215	30,265	30,265	30,240	30,218	30,192	73,0	80,0	83 3	82,8	80,0	78,2	0	0	11	10	11	14	13	13½	N. E.	Clear—dew
14.	30.200	30,220	30,200	30,188	30,155	30,165	71,4	80 0	82,0	82,8	80 5	78 2	0	0	13	12	13	14	14	14	N. E.	Clear—heavy dew
15	30,188	30,235	30,240	30 215	30,188	30,184	73,5	82,0	82 5	82,2	80,0	78,6	0	0	13	11½	13	13	13	14	Variable.	Clear—dew
16	30,200	30 270	30,278	30.200	30,178	30,188	74,5	80,5	82 5	84 0	80,2	78,0	0	0	13	14	11½	14	15	15½	Calm & N. E.	Clear—dew
17	30,200	30,248	30,255	30,205	30,168	30.200	74,0	80 5	85,2	84,8	79,2	75 5	0	0	15	12½	14	14	15	14	Calm & Variable.	Clear—heavy dew
18	30,150	30,200	30,168	30,128	30,098	30 092	72,0	82,0	84,5	85,0	79,0	77,8	0	0	14	14½	15	15	16	15½	Calm & S. E.	Clear—heavy dew
19	30,115	30,165	30,160	30,138	30,100	30,155	71,0	81.2	86.0	85,5	79,5	78,2	0	0	14	13½	15	16	14	14	Variable & S. E.	Clear—heavy dew
20	30,145	30,200	30,188	30,138	30,125	30,138	73,0	82.2	84,8	84,0	80,3	78 0	0	0	14	13½	14	14	14	14	Calm & S. E.	Clear—dew
21	30,160	30,185	30,165	30,138	30,135	30,144	75,5	83,0	85,2	85,2	81,0	79.2	0	0	14	12	15	15¼	15	14	Variable Calm & S.E.	Clear—dew
22	30,145	30,200	30,165	30,135	30,115	30,118	75,0	82,0	85 2	84,0	81,0	79 5	0	0	13	13	14	14	14½	14½	Calm & S. E.	Clear—heavy dew
23	30,115	30,200	30,188	30.135	30,125	30,118	76,0	80,8	84,7	85,2	81.2	79,4	0	0	13	14	17	17½	17	17	S. E. & Calm	Clear—dew
24	30,140	30,200	30,200	30,138	30.120	30,125	78.0	82,4	85,2	85,2	82,0	80,4	0	0	15	14	15	16	16	16½	S. E.	Clear—some dew
25	30,150	30,165	30.145	30,118	30,110	30,115	79,0	85,2	82,0	86,2	81,6	80,5	0	0	14	14½	15	14½	15	15½	S. E.	Clear
26	30,110	30,135	30,132	30,100	30,100	30,120	78,0	85 0	87,0	86,5	82,0	81,2	0	0	14	14½	15	15	14½	14	Calm & S. E.	Clear—dew
27	30,068	30,110	30,110	30,065	30,038	30,048	79,0	83 5	87,0	86 5	83,0	85,5	0	0	12	12½	14½	16	14	14	Calm & S. E.	Clear—dew
28	30.065	30,110	30.100	30 060	30,015	30 035	80,0	84,0	87,0	86,0	81.4	81,2	0	0	13	12	14	15	14½	14	S. E & Calm	Clear and hazy

	Barometer. Inches.	Thermometer. Degrees.
General Mean....	30,1531	80,51
Greatest Height..	30,278	87,5
Least...........	30,000	70,0
Extreme Difference	00,278	17,5

	Hygrometer Dry. Deg.
Greatest Height...	33 0
Least...........	10.0
Mean...........	21,5
Extreme Difference	23 0

PHASES OF THE MOON.

	D.	H.	M.
New Moon................	2	11	59 A.
First Quarter.............	9	4	11 A.
Full Moon................	17	5	54 M.
Last Quarter.........	25	10	58 M.

In this Month

The nearest approach of the Moon to the Earth was on the 4th.
The Moon had receded to the greatest distance on the 20th.

March 1821.

Days.	BAROMETER.						THERMOMETER (*exposed to a free current of air.*)						RAIN GAUGE.		HYGROMETER.						WINDS.	WEATHER, &c.
	Sun rise.	*10 o'clock.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*Sun rise.*	*10 o'clock.*	*Noon.*	*2 o'clock.*	*Sun set.*	*9 o'clock.*	*From Sun-rise to Sun-set.*	*From Sun-set to Sun-rise.*	*Sun-rise.* Dry.	*10 o'clock* Dry.	*Noon.* Dry.	*2 o'clock.* Dry.	*Sun-set.* Dry.	*9 o'clock.* Dry.		
	inches.	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	deg.	inch.	inch.	d.	d.	d.	d.	d.	d.		
1	30,055	30,125	30,115	30,078	30,060	30,068	79,5	84,0	86,0	85,6	82,5	81,5	o	o	11½	14	16½	15½	15	14½	S. E.	Clear
2	30,130	30,200	30,200	30,158	30,155	30,125	77,5	85,0	86,2	86,4	82,0	81,5	o	o	14	14½	16	17	16	15½	S. E.	Clear
3	30,148	30,188	30,178	30,135	30,120	30,110	78,0	84,2	86,5	86,0	82,0	79,2	o	o	14	15	18	18	17	17½	S. E.	Clear—dew at night
4	30,100	30,115	30,144	......	30,045	30,048	75,0	83,3	85,0	....	79,2	79,2	o	o	15	16½	17	..	20	19	S. E.	Clear—heavy dew
5	30,065	30,100	30,115	30,078	30,065	30,070	74,5	83,3	85,2	85,6	81,5	80,2	o	o	17	18	19	19	18½	18	S. E.	Clear—dew
6	30,145	30,210	30,200	30,155	30,135	30,140	79,0	84,2	86,2	85,2	82,0	79,5	o	o	16	17	18	19	20	20	S. E.	Clear
7	30,120	30,200	30,188	30,156	30,115	30,125	75,0	83,5	86,0	85,0	80,5	80,8	o	o	19	20	20	20	19½	19	S. E.	Clear—dew
8	30,134	30,148	30,116	30,110	30,110	30,115	77,5	83,4	86,2	85,2	82,5	81,5	o	o	18½	16	18	18½	19	18½	S. E.	Clear—distant lightning
9	30,110	30,155	30,165	30,145	30,105	30,124	78,0	84,5	82,5	81,6	80,0	81,0	0,8	0,5	13	12	12	13	14	14	N. E.	Cloudy—rain—distant lightning
10	30,110	30,158	30,155	30,118	30,065	30,085	80,0	79,8	81,0	81,0	81,0	80,5	o	o	11½	7	7	12	11	10	Variable.	Cloudy
11	30,100	30,135	30,110	30,105	30,120	30,025	80,5	84,0	86,0	87,5	82,0	82,0	o	o	10	10½	11½	12	13	12	S. E.	Clear
12	30,025	30,083	30,048	30,018	30,000	30,018	79,2	87,0	86,0	87,0	82,5	82,0	o	o	10	11	12	15	13	12	S. E.	Clear
13	30,050	30,135	30,128	30,058	30,048	30,065	80,0	86,0	87,5	86,5	83,0	82,4	o	o	11	11½	14	14½	13½	12	Fresh S. E.	Clear
14	30,100	30,215	30,188	30,145	30,115	30,120	80,4	86,0	87,5	87,0	82,5	83,0	o	o	11½	12	15	15	14½	14	S. E.	Clear
15	30,110	30,144	30,135	30,048	30,035	30,110	80,0	85,8	87,2	87,0	82,5	83,4	o	o	14	14	15	16	15	14½	S. E.	Clear
16	30,058	30,080	30,015	29,982	29,945	29,960	82,0	87,0	89,8	87,5	83,5	82,5	o	o	13	15	15	14½	14	13	S. E.	Clear
17	30,000	30,066	30,145	30,015	30,000	30,011	80,0	87,0	88,4	87,0	83,5	83,0	o	o	11	12	12½	12	12	11½	S. E.	Flying clouds
18	30,015	30,095	30,088	30,025	29,978	29,998	82,5	83,4	88,4	86,5	82,5	81,5	o	o	12	12½	12	13½	12	12	S. E.	Clear
19	30,000	29,965	30,025	29,958	29,948	29,988	82,4	86,5	88,0	86,6	83,4	81,0	o	o	10½	11	11½	12	12	11	Fresh S. E.	Hazy—some rain at Noon
20	30,000	30,068	30,045	30,010	30,045	29,968	81,5	86,5	86,6	86,6	84,0	83,5	o	o	10	11	13	13	12	12	S. E.	Cloudy
21	29,987	30,055	30,048	30,018	29,980	30,015	81,2	88,0	89,2	87,5	83,0	82,8	o	o	12½	13	13½	11½	11½	11	S. E.	Clear
22	30,050	30,075	30,055	30,000	29,975	29,980	80,5	88,6	83,8	89,5	84,0	83,0	o	o	10	13½	14	13½	12½	11	S. E.	Clear
23	30,020	30,082	30,065	30,025	29,982	30,015	81,5	88,0	90,2	89,0	83,8	83,0	o	o	13	12½	13	13½	13	12½	S. E.	Clear
24	30,100	29,975	30,065	30,025	30,000	30,015	82,5	89,0	88,5	88,5	83,5	83,0	o	o	12	12½	13	12½	13	12½	S. E.	Clear
25	30,067	30,125	30,120	30,110	30,065	30,100	83,0	87,7	89,0	89,5	84,5	83,5	o	o	11½	12	14	15	14½	14	S. E.	Clear
26	30,126	30,178	30,200	30,150	30,134	30,138	82,0	87,0	87,2	87,5	83,4	82,4	o	o	12½	14	14½	15	15	15	S. E.	Clear
27	30,142	30,200	30,178	30,155	30,100	30,088	77,4	85,2	87,2	87,0	83,4	84,0	o	o	15	15	15½	19	18	18	S. E. and Calm.	Clear—cloudy
28	30,100	30,155	30,108	30,110	30,105	30,068	83,0	86,0	88,0	87,0	84,0	83,5	o	o	17	16	17	17	16	16	S. E.	Clear
29	30,167	30,148	30,140	30,115	30,088	30,120	78,5	86,0	87,5	87,0	84,0	83,0	o	o	14	14	16	17	17	18	S. E.	Hazy
30	30,100	30,172	30,165	30,120	30,110	30,110	83,0	85,2	86,2	86,0	83,4	83,0	o	o	17	16	17	16	17	16	S. E.	Hazy
31	30,118	30,158	30,155	30,115	30,065	30,058	81,0	86,5	87,2	87,2	84,2	84,0	o	o	14	16	16½	17	16	16	S. E.	Clear

	Barometer.	Thermometer.
	Inches.	Degrees.
General Mean	30,0896	83,945
Greatest Height	30,215	90,2
Least	29,945	74,5
Extreme Difference	00,270	15,7

Rain.	Inches.
Observed..	1,3
Reduced..	0,32

Hygrometer.	Dry.
	Deg.
Greatest Height.....	20,0
Least Height.......	07,0
Mean...............	13,5
Extreme Difference.	13,0

PHASES OF THE MOON.

	D.	H.	M.
New Moon	4	10	58 M.
First Quarter	11	2	28 M.
Full Moon	19	0	14 M.
Last Quarter..	27	2	11 M.

In this Month

The nearest approach of the Moon to the Earth was on the 4th.

The Moon had receded to the greatest distance on the 19th.

April 1821.

Days.	BAROMETER.						THERMOMETER (*exposed to a free current of air.*)						RAIN GAUGE.		HYGROMETER.						WINDS.	WEATHER, &c.
	Sun rise.	*10 o'clock.*	*Noon.*	*2 o'clock.*	*Sun set.*	*8 o'clock.*	*Sun rise.*	*10 o'clock.*	*Noon.*	*2 o'clock.*	*Sun set.*	*8 o'clock.*	*From Sun-rise to Sun-set.*	*From Sun-set to Sun-rise.*	*Sun rise.* Dry.	*10 o'clock* Dry.	*Noon.* Dry.	*2 o'clock.* Dry.	*Sun set.* Dry.	*8 o'clock.* Dry.		
	inches.	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	deg.	inch.	inch.	d.	d.	d.	d.	d.	d.		
1	30,072	30,145	30,140	30,115	30,075	30,100	80,0	87,0	88,0	88,0	85,4	84,2	0	0	14	14½	16	17	17	17	S. E.	Clear
2	30,110	30,180	30,140	30,135	30,118	30,135	80,4	86,8	88,0	88,0	85,4	84,5	0	0	14½	16	16	16½	16	17	S. E.	Clear
3	30,150	30,215	30,217	30,155	30,135	30,150	82,0	86,7	87,2	87,5	84,0	83,5	0	0	16	15½	17	18	16½	16½	S. E.	Clear
4	30,145	30,200	30,200	30,188	30,128	30,120	83,3	85,2	87,2	87,5	85,0	82,5	0	0	17	17	19	19	20	19	S. E.	Clear
5	30,114	30,148	30,140	30,125	30,110	30,110	79,6	86,4	89,8	88,0	84,5	83,0	0	0	17½	20	21	20½	19	19	S. E.	Clear
6	30,142	30,168	30,165	30,160	30,118	30,125	78,2	86,2	89,5	88,8	85,0	83,2	0	0	16½	17	18½	18	17	15½	S. E.	Clear
7	30,108	30,175	30,188	30,135	30,110	30,125	84,0	86,5	87,2	88,0	83,5	83,0	0	0	15	16	17½	18	17	17	S. E.	Clear
8	30,145	30,148	30,138	30,115	30,165	30,088	83,5	85,2	90,0	89,2	84,5	83,5	0	0	16	16	17	17	16½	16	S. E.	Clear
9	30,100	30,135	30,125	30,045	30,045	30,046	82,5	86,2	90,0	89,0	86,0	84,5	0	0	15	18	19	19	17	16½	S. E.	Clear
10	30,040	30,110	30,100	30,048	30,028	30,035	84,0	86,5	94,4	91,5	85,5	85,2	0	0	13	16	22	20	19½	19	S. E.	Clear
11	30,025	30,046	30,020	29,965	29,958	29,974	83,0	89,0	93,2	90,8	87,5	85,2	0	0	21	16	21	19	17	15	S. W. and S. E.	Clear—hazy
12	30,000	30,038	30,035	29,978	29,955	29,950	83,0	89,8	92,5	93,0	87,2	85,5	0	0	13	18	22	23	18	16	S. W. and S. E.	Clear—hazy
13	30,005	30,055	30,045	30,000	29,965	29,975	83,5	89,5	93,5	92,5	86,0	83,5	0	0	14	15	20	18	16	16	W. and S. E.	Clear
14	30,000	30,078	30,075	30,045	30,000	30,008	83,0	88,5	89,8	89,5	85,0	83,3	0	0	15	16½	17	19	18	17	S. E.	Clear
15	30,005	30,075	30,055	30,035	30,000	30,015	83,5	88,2	89,2	89,0	85,0	82,8	0	0	16	17	18	19	19	17½	S. E.	Clear
16	30,000	30,075	30,055	30,035	30,000	30,080	82,5	89,0	89,5	89,5	86,5	86,0	0	0	17	19	20	20	19	16½	S. E.	Clear
17	30,050	30,088	30,045	30,015	29,988	30,000	83,0	89,4	90,4	90,0	86,2	84,5	0	0	15	15	16	16½	16	15½	S. E.	Clear
18	30,018	30,045	30,040	29,987	29,965	29,965	85,0	91,5	91,8	91,6	86,0	85,2	0	0	14	18	18	17	16	15½	Fresh S. E.	Clear
19	29,987	30,040	30,030	30,004	29,985	29,988	84,4	90,0	90,5	90,4	86,0	85,2	0	0	13	13	16	16	16	15	S. E.	Clear
20	30,034	30,028	30,035	30,015	29,988	30,000	83,2	89,2	90,0	89,2	88,2	86,0	0	0	13	16	16	17	16	14½	S. E.	Clear and cloudy
21	30,035	30,106	30,100	30,045	30,015	30,025	85,4	90,0	90,8	90,0	86,5	86,0	0	0	13½	15	17	17	17	16½	S. E.	Clear
22	30,065	30,075	30,060	30,025	30,018	30,020	82,6	89,4	91,4	91,0	89,8	86,6	0	0	14	16	18	18	17½	17	S. E.	Clear
23	30,016	30,055	30,048	30,018	29,988	30,000	83,4	89,0	92,0	91,8	86,8	86,2	0	0	15	16½	17	18	18	17	S. E.	Clear
24	30,005	30,055	30,044	30,015	30,008	30,100	84,0	91,5	91,8	91,0	86,0	86,0	0	0	16½	17½	18	19	18	16½	S. E.	Clear
25	30,035	30,110	30,100	30,056	30,015	30,045	84,0	90,5	91,2	91,2	86,0	85,8	0	0	14	16	17	18	16½	16	Fresh S. E.	Clear
26	30,045	30,112	30,105	30,120	30,100	30,105	84,5	90,0	91,7	91,0	87,5	86,0	0	0	14	18	18	17½	16	16	S. E.	Clear
27	30,050	30,088	30,045	30,005	29,965	30,000	84,0	90,2	91,4	90,4	86,5	85,6	0	0	14	17	17	17½	16	16	Fresh S. E.	Clear
28	30,004	30,088	30,082	30,045	29,988	29,990	83,8	90,5	91,0	90,0	86,0	85,2	0	0	13½	16	17	18	16	15	S. E.	Clear
29	30,000	30,200	30,115	30,045	30,000	30,015	83,8	79,6	84,0	86,0	83,5	83,4	0	6,8	15	15	17	19	18½	17½	N. E. and S. E.	Clear—hazy—rain
30	30,040	30,106	30,100	30,028	30,005	30,015	83,5	86,0	88,2	86,5	86,0	85,6	0	0	15	14	15	16	16	16	S. E.	Clear

	Barometer. Inches.	Thermometer. Degrees.
General Mean	30,064	80,7
Greatest Height	30,217	94,4
Least	29,950	78,2
Extreme Difference	00,267	16,2

	Rain. Inches.
Observed	6,8
Reduced	1,7

	Hygrometer. Dry. Deg.
Greatest Height ..	23,0
Least	13,0
Mean	18,0
Extreme Difference	10,0

PHASES OF THE MOON.

	D.	H.	M.	
New Moon	2	8	32	A.
First Quarter	9	2	45	A.
Full Moon	17	5	52	A.
Last Quarter	25	1	31	A.

In this Month

The nearest approach of the Moon to the Earth was on the 2d,
The Moon had receded to the greatest distance on the 15th.

May 1821.

Days.	Barometer.						Thermometer. (exposed to a free current of air.)						Rain Gauge.		Hygrometer.						Winds.	Weather, &c.
	Sun rise.	10 o'clock.	Noon.	2 o'clock.	Sun set.	8 o'clock.	Sun rise.	10 o'clock.	Noon.	2 o'clock.	Sun set.	8 o'clock.	From Sun-set to Sun-rise.	From Sun-rise to Sun-set.	Sun-rise.	10 o'clock	Noon.	2 o'clock.	Sun set.	8 o'clock.		
															Dry.	Dry.	Dry.	Dry.	Dry.	Dry.		
	inches.	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	deg.	inch.	inch.	d.	d.	d.	d.	d.	d.		
1	30 025	30,100	30,075	30,128	29,975	30,000	82,5	86,8	89,0	88,2	85,5	85,5	0	0	16	16	17	16,5	15	14,5	S. E.	Clear—cloudy
2	30,010	30,065	30,058	30,025	30,010	30,018	85,0	86,6	87,5	87,0	86,0	85,2	0	0	14	14½	14	15	16	16	S. E.	Cloudy—some rain
3	30,026	30,105	30,100	30,055	30,035	30,040	84,4	87,2	88,8	88 6	85 5	85 0	0	0	14½	16	18½	19	18	17½	S. E.	Clear
4	30,055	30,119	30,117	30,070	30.026	30.015	84,0	89 0	90 5	87,8	87.5	86,5	0	0	15	16	17½	16	16	15½	S. E.	Clear—cloudy
5	30,028	30,060	30,056	30,018	29,980	29,978	85,0	86,8	89 6	90,0	87,2	86,5	0	0	14	16	16	16½	16½	16	S. E.	Clear—distant lightning
6	30,025	30,075	30.035	30,000	29,958	29.960	85,5	87,6	89,8	92,0	87,5	87,2	0	0	14	16	21	19½	15½	15	S. E. and W.	Clear
7	30,015	30,045	30,048	30,018	29,988	30,000	87,0	91,2	91,2	90,5	87,2	87,0	0	0	13½	16	16½	18	15	15½	Fresh S. E.	Clear
8	30,015	30,045	30,040	30,008	29.958	29,960	85,6	88,8	91,5	90,5	87,0	87,0	0	0	14	17	18	19	17½	16	Fresh S. E.	Clear
9	29,987	30,035	30,025	29,978	29,958	29,968	85,0	92,5	93,5	91,5	87,3	86,2	0	0	13	19	19½	17½	15½	15½	Fresh S. E. & S. W.	Clear
10	30,000	30,015	30,018	29,965	29,958	29,945	86,5	89,8	90,5	90,2	87,0	85,6	0	0	14½	15	15½	18½	17	15½	S. E.	Hazy
11	30,000	30,019	30,100	29.948	29,946	29,955	85 8	90,5	91,0	90,5	87,4	86.4	0	0	15	16	18½	16½	15½	15	S. E.	Clear
12	29,958	30,000	29,989	29,935	29,900	29,908	84 8	80,8	92,5	91,0	87,0	87,0	0	0	15	18	19	21	16	15	S. E.	Clear—halo round the Moon
13	29.915	29,955	29,945	29,888	29,855	29,835	85,6	88,6	91,0	91,0	92,5	88,0	0	0	15	16½	19	16	17	16½	S. E. and S. W.	Clear—halo round the Moon
14	29,888	29,920	29,925	29,890	29.858	29,850	86,0	91,6	91,0	91,4	88,2	87.5	0	0	15	16	18	16	15	14½	S. E.	Mostly clear
15	29.910	29,950	29,960	29,935	29,900	29,915	86,5	91,2	93,0	93 0	87,2	88,0	0	0	15	18	18½	19	17	16½	S. E. and Calm.	Mostly clear
16	29,950	30,020	30,025	29,958	29.945	29,948	86,0	90,6	91,7	91,5	87,2	87,0	0	0	15	18	19	21	21	17½	S. E.	Hazy
17	29.965	30,000	29,989	29,925	29,922	29,918	85,6	91,5	92,0	91,5	88,0	87,5	0	0	16	17½	20	20½	17½	17½	S. E.	Mostly clear
18	29,955	30,000	29.988	29,938	29 865	29,864	84,8	89,4	93,4	93,0	87,5	87,2	0	0	16	19	25	25	17½	16½	S. E. and W.	Mostly clear
19	29,865	29.880	29,900	29,845	29,778	29,800	84,0	92,0	93,4	92,2	89,2	88.0	0	0	15	18	23	22½	21½	17½	S. E.	Mostly clear
20	29,805	29,800	29,778	29,745	29,700	29,689	85,6	91,6	93,2	96,0	89,2	88,2	0	0	22	26½	32	35	25	22	S. E. and W.	Clear—hazy
21	29,755	29,818	29,815	29,800	29,788	29,818	87,0	91,2	92,6	93,0	88,5	89.0	0	0	25	18½	31½	33½	26	20	W. and S. E.	Hazy—vivid lightning
22	29,828	29,888	29,889	29,889	29,855	29,845	87,0	88,8	91,5	89,2	88.0	87,2	0	0	18	24	27	27	27	25½	S. E.	Hazy—vivid lightning
23	29,865	29,874	29,848	29.828	29,805	29,806	85,0	86,0	88,2	89,8	89,2	87,2	0	0	25	24	26½	27½	26	23½	S. W. and S. E.	Cloudy—lightning
24	29,804	29,835	29,815	29.770	29,788	29,800	86,5	90,2	92 0	93,8	89.8	87,3	0	0	24	27½	30½	34½	25	19½	S. W. and S. E.	Cloudy
25	29 818	29,835	29 830	29,828	29,815	29,825	86,2	90,5	93,0	95,0	89,5	87.2	0	0	22	29½	33½	33	26	22½	S. W. and S. E.	Mostly clear
26	29,818	29.868	29,870	29,868	29,855	29,848	87,0	91,0	95,0	92,5	88,0	86,5	0	0	22	27½	31	29	20½	19½	S. E.	Clear
27	29,885	29,915	29,918	29,878	29,868	29,900	85,0	92,5	94,5	93.3	89,0	86,2	0	0	20½	27	25½	26	22½	18½	S. E.	Clear
28	29,902	29,948	29,942	29,900	29,865	29,906	87,0	93,3	95,5	93 4	86.7	86,2	0	0	20	26	27	26½	20	15½	S. E and W.	Clear—vivid lightning
29	29,910	29,965	29,965	29,918	29,900	29,910	86,5	92,0	96,5	95 0	89,2	89,5	0	0	22	27	34	31	22	27½	S E. and W.	Clear
30	29,918	29,955	29,965	29.925	29.888	29 900	87,0	92,5	95,5	96,2	87.5	87 6	0	0	23	29½	34½	33	24	21	S. E. and W.	Clear—vivid lightning
31	29,905	29,950	29,945	29,925	29.900	29.908	87,0	92,0	95.0	95 2	89,2	87,7	0	0	25	30	36	38	26	25½	Westerly.	Clear

	Barometer. Inches.	Thermometer. Degrees.
General Mean	29,9080	89 05
Greatest Height	30,128	96,5
Least	29,689	82,5
Extreme Difference	00,439	14 0

	Hygrometer. Dry. Deg.
Greatest Height	38.0
Least	13,5
Mean	25 75
Extreme Difference	24,5

PHASES OF THE MOON.

	D.	H.	M.
New Moon	2	4	53 M.
First Quarter	9	5	4 M.
Full Moon	17	9	27 M.
Last Quarter	24	9	24 A.
New Moon	31	0	43 A.

In this Month

The Moon had receded to the greatest distance on the 1st.

The nearest approach of the Moon to the Earth was on the 14th.

June 1821.

Days.	Barometer.						Thermometer (exposed to a free current of air.)						Rain Gauge.		Hygrometer.						Winds.	Weather, &c.
	Sun rise.	10 o'clock.	Noon.	2 o'clock.	Sun set.	8 o'clock.	Sun rise.	10 o'clock.	Noon.	2 o'clock.	Sun set.	8 o'clock.	From Sun-rise to Sun-set.	From Sun-set to Sun-rise.	Sun rise.	10 o'clock	Noon.	2 o'clock.	Sun set.	8 o'clock.		
															Dry.	Dry.	Dry.	Dry.	Dry.	Dry.		
	inches.	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	deg.	inch.	inch.	d.	d.	d.	d.	d.	d.		
1	29,935	29,958	29,950	29,928	29,918	29,920	87,5	91,0	92,5	95,2	87,7	87,0	0	0	28	30	35	35	27	25½	W. and E. S. E.	Mostly clear
2	29,925	29,935	29,934	29,910	29,868	29,875	87,0	92,5	93,5	95,2	88,3	87,8	0	0	24	30	35	35	27	25	W. and E. S. E.	Mostly clear
3	29,900	29,925	29,920	29,915	29,858	29,868	87,0	91,2	94,0	94,5	87,2	88,0	0	0	28	30½	35	30½	25	23½	W. and S. E.	Clear
4	29,900	29,945	29,958	29,938	29,935	29,940	87,0	91,5	95,0	100,5	90,7	88,7	0	0	25	29	32	35	28	26	W. and S. E.	Clear
5	29,988	30,035	30,035	30,015	30,000	30,005	88,0	93,0	91,5	90,5	86,5	85,5	0	0	26	27	27	26	20	19	Fresh S. E.	Clear
6	30,020	30,048	30,045	29,986	29,965	29,955	88,0	91,4	95,5	92,6	87,2	87,0	0	0	20	25½	27½	26	22	22	W. and E. S. E.	Clear
7	30,000	30,015	30,005	29,988	29,917	29,928	87,2	90,5	93,5	91,8	88,0	87,2	0	0	23	29	27½	27	22½	20	S. E.	Clear
8	29,925	29,946	29,938	29,900	29,874	29,865	86,5	90,0	92,5	91,2	86,0	85,2	0	0	20	24½	23½	23	20	17	S. W. and S. E.	Clear
9	29,918	29,968	29,978	29,970	29,900	29,915	86,6	90,7	90,5	90,0	86,4	86,5	0	0	20	23	22	21½	18	18½	S. E.	Clear
10	29,955	30,010	29,984	29,966	29,905	29,910	85,8	92,7	93,5	92,6	87,5	85,5	0	0	19	24	25½	25½	22	18½	S. E.	Clear
11	29 955	29,982	29,955	29,900	29,858	29,910	85,5	90,0	91,0	91,0	86,8	87,0	0	0	17	18½	26	21	19	17	Fresh and S. E.	Clear
12	29,918	29,946	29,945	29,890	29,858	29,855	86,0	91,0	92,0	90,5	87,0	86,3	0	0	18	19½	21	22	19	17½	S. E.	Clear
13	29,900	29,946	29,918	29,888	29,845	26,840	86,2	91,2	92,0	92,4	88,2	87,6	0	0	19	23½	23	25	22	21½	S. W. and S. E.	Clear
14	29,888	29,888	29,900	29,865	29,835	29,838	88,0	90,2	93,2	92,4	88,5	88,2	0	0	22	27	26½	27	22	21	W. and S. E.	Clear
15	29,865	29,915	29,900	29,878	29,865	29,855	87,0	91,5	94,0	92,2	88,2	86,0	0	0	21	26	30	27	22	20	Fresh S. E.	Clear
16	29,910	29 940	29,945	29,915	29,868	29,868	87,5	92,0	93,0	94,0	88,5	86,4	0	0	21	24	31	29	25	22	S. W. and E. S. E.	Clear
17	29,828	29,934	29,925	29,882	29,855	29,865	86,5	90,5	93,3	91,4	88,5	86,5	0	0	21	27½	28	27	23	22	S. W. and E. S. E.	Hazy—halo round the Moon
18	29,870	29,908	29,900	29,868	29,900	29,864	85,8	90,4	94,0	92,0	86,6	86,5	0	0	20	28	32	29	23	23	S. W. and E. S. E.	Clear—halo round the Moon
19	29.900	29 965	29,958	29 925	29,900	29,925	86,0	91,4	93,0	95,2	86,0	86,6	0	0	23	29	33	35	23	24	S. W. and E. S. E.	Clear—lightning
20	29,900	30,030	30,030	30,000	30,000	29,988	86,0	91,0	93,5	93,2	89,2	86,0	0	0	22	28	30	30	25½	21	S. W. and S. E.	Clear
21	30,020	30,045	30,025	29,975	29,945	29,988	86,0	90,0	92,5	93,0	85,8	88,0	0	0	22	29	34	33	25	25	S. W. and S. E.	Hazy—lightning N.W. Quarter
22	30,000	30,035	30,000	29 965	29.925	29 945	85,0	90,0	92,0	93,5	87,5	87,4	0	0	30	33	35	37	26	26	S. W. and S. E.	Clear—lightning N. W. Quarter
23	29,965	30,000	29,968	29,928	29,900	29.918	85,6	91,4	92,0	94,0	89,6	87,5	0	0	25	31	33	35	32	26	W. and S. E.	Hazy—lightning in the West
24	29 940	29,978	29,968	29,948	29.900	29,940	85,0	90,0	91,0	91,0	90 2	89,6	0	0	27	30	32	34	33	32½	Westerly.	Hazy—vivid lightning
25	29,938	30,000	30,000	29,978	29,928	29.944	84,8	88,0	89,2	89,8	87,2	85,5	0	0	30	30	31½	32	29½	29	S. W. and S. E.	Cloudy—some rain
26	29,958	30,008	30,000	29,978	29,928	29,955	85,0	87,4	88.2	91.0	86,5	86,0	0	0	28	28	29½	30½	29½	23	S E.	Hazy—thunder—lightning-rain
27	29,950	30,020	30.015	30,000	29,945	29.945	82,7	86.4	88,0	87,5	85,0	81,5	4,0	0	22	23½	26	24	23	22	S. W. and E. S. E.	Cloudy
28	29,987	30 030	30,035	30,018	29,968	29,967	83,5	86,0	88,0	89,2	85,2	85,0	0	0	20	22	27	30	22	21	S. W. and S. E.	Mostly hazy
29	30,000	30,045	30,028	29,975	29,928	29,918	85,0	87,0	90,0	90,0	86,2	86,0	0	0	27	30	33	34	23	22	S W. and E. S. E.	Clear—some rain
30	29,940	29,975	29.958	29,905	29,888	29 868	84·5	88,0	90.6	91,0	91,0	91,0	0,4	0	23	29	32	34	35	37	Fresh S. W.	Clear

	Barometer.	Thermometer.
	Inches.	Degrees.
General Mean	29,938	91,6
Greatest Height	30,048	100,5
Least	29,828	82,7
Extreme Difference	00,220	17,8

	Rain.
	Inches.
Observed	4,4
Reduced	1,1

	Hygrometer.
	Dry.
	Deg.
Greatest Height ..	37 0
Least	17,0
Mean	20,7
Extreme Difference	20,0

PHASES OF THE MOON.

	D.	H.	M.
First Quarter	7	9	5 A.
Full Moon	15	10	35 A.
Last Quarter	23	2	51 M.
New Moon	29	9	11 A.

In this Month

The Moon had receded to the greatest distance on the 9th.
The nearest approach of the Moon to the Earth was on the 25th.

July 1821.

Days.	Barometer.						Thermometer. (exposed to a free current of air.)						Rain Gauge.		Hygrometer.						Winds.	Weather, &c.
	Sun rise.	10 o'clock.	Noon.	2 o'clock.	Sun set.	8 o'clock.	Sun rise.	10 o'clock.	Noon.	2 o'clock.	Sun set.	8 o'clock.	From Sun-set to Sun-rise.	From Sun-rise to Sun-set.	Sun-rise. Dry.	10 o'clock Dry.	Noon. Dry.	2 o'clock. Dry.	Sun set. Dry:	8 o'clock. Dry.		
	inches.	inches:	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	deg.	inch.	inch.	d.	d.	d.	d.	d.	d.		
1	29,945	29,918	29,908	29,868	29,838	29,838	85,8	89,0	91,5	91,0	90,7	90,8	0	0	35	35	36,5	37	37,5	38	Westerly.	Clear—hazy
2	29,900	29,882	29,888	29,865	29,837	29,835	86,0	89,0	90,6	91,0	90,6	90,5	0	0	35	36	37	38	38	38,5	Westerly.	Hazy— cloudy
3	29,880	29,878	29,868	29,845	29,855	29,840	86,5	90,0	91,2	91,5	91 6	91,4	0	0	36	38	38,5	39	40	40,5	Fresh W.	Hazy
4	29,885	29,940	29,940	29,898	29,845	29,850	87,2	91,4	92,4	92,8	93,5	92,5	0	0	39,5	39	40	40	40	40	Light & Fresh W.	Hazy—cloudy
5	29,900	29,975	29,955	29,914	29,868	29,865	88,0	91,2	93,4	94,0	89,8	89,4	0	0	39	38,7	39,5	40,5	35	34,0	Variable.	Clear—hazy
6	29,930	29,970	29,914	29.878	29,878	29,910	88,0	91,2	92,6	94,0	87,5	86,5	0	0	35	36	37,5	40	32	30	Variable.	Clear—hazy
7	29,915	29,940	29,945	29,900	29,900	29,938	88,8	90,0	92,5	93 0	87,4	87,2	0	0	32	34	36,5	33	31	31	W. and S. E.	Mostly clear—with some rain
8	29,988	29,940	29,940	29.925	29,908	29,940	86,5	90,0	91,0	91,5	87.4	85,5	0	0,4	31	32,5	35	37	31	27	Variable.	Hazy—cloudy
9	29,938	30,010	30,000	29,945	29,950	29,918	87,0	87,8	89,4	90,2	88 0	87,0	0	0	29	31,5	34	35,6	32	32	W. and S. W.	Cloudy
10	29,920	29,966	29,962	29.928	29,905	29,908	85,2	88,0	90,2	92.5	88,5	87,5	0	0	32,5	34	36	39,4	32	32,5	W. and S. E.	Hazy—cloudy
11	29,935	29,958	29,945	29,875	29,835	29,900	85,2	88,2	89,5	92,0	87,0	86,8	0	0	31,0	34	36	39,5	32	30	W. and S. E.	Hazy—cloudy
12	29,918	29,965	29,945	29,905	29,888	29,815	86,2	88,8	91,5	92,0	86 5	86,0	0	0	32	35	37,5	39	37	33	W. and S. E.	Clear—cloudy
13	29,955	30,000	29,999	29,935	29.928	29,948	86,6	90,5	92,0	93,0	86,0	86,7	0	0	33	35	37	36,5	35,6	34	W. and S. E.	Hazy
14	29 958	29,998	29,973	29,928	29,878	29,875	85,4	88,0	89,8	90,0	85,6	85.5	0,3	0	30	30,5	32	33	29,5	28	W. and S. E.	Cloudy—some rain
15	29,900	29 915	29,919	29,900	29,848	29,845	85,0	87,0	89,8	90,4	87,5	85,2	0	0	28	31	32	32	31	28	W. and S. E.	Hazy
16	29 900	29,930	29,945	29 915	29,900	29,888	84,5	86,5	86,8	87,0	84,5	83,2	0,6	0	27	27,5	25	24,5	24	22	Calm and S. E.	Hazy
17	29,900	29,942	29,938	29,918	29,878	29,900	82,0	86,5	89,2	90,2	88,6	86,5	0	0	20	26	29	32	29	26,5	Variable.	Hazy—clear
18	29,915	29 940	29,935	29,878	29,855	29,900	86,0	89,0	90,5	92,2	88.4	86.8	0	0	24	28	32	34	29,5	25,5	W. and S. E.	Hazy—clear
19	29,888	29,930	29,920	29,925	29,900	29,888	82,6	86,8	87,5	88,0	86,2	84,6	0,3	0,4	22	24	25	26	24,5	22	Westerly & Calm.	Cloudy—some rain
20	29.915	29,946	29,945	29,928	29,900	29,910	84,0	86.6	87,2	88,0	87,0	84,5	1,8	0	23	26	28	30	29.5	22	South Westerly.	Mostly hazy, with some rain
21	29,858	29,945	29,940	29,900	29,878	29,900	85,2	87,0	87,7	88,5	87,2	87,0	0,2	0	26	27,5	29	31,5	29,5	29	Westerly.	Hazy—cloudy
22	29,855	29,945	29,938	29,900	29,858	29,865	85,0	87,2	89,5	90,5	87.5	87,2	0	0	29	30	32	34	31	31	Westerly.	Hazy—cloudy
23	......	29,945	29,915	29,988	29,988	29,900	....	88,8	90,0	91,0	88,8	89,2	0	0	....	32,5	32,5	34	34	33	W. and S. E.	Hazy—cloudy
24	29 946	29,975	29,974	29,915	29,900	29,915	86 4	88,8	90,5	91,0	87,2	87,2	0	0	32	33	33,5	34	30	29,5	W. and S. E.	Clear—cloudy
25	29,928	29,978	29,970	29,935	29,925	29,915	86,5	89,7	91,5	91,2	87,5	86,5	0	0	30	32	32	33	30	28,5	S. E.	Clear
26	30,000	30,005	29,975	29,945	29,928	29 935	86,0	90,0	92,0	91,2	87,2	27,2	0	0	29	29,5	29,5	30	28,5	26,5	S. E.	Hazy—lightning
27	29,988	29,990	30,000	29,978	29 945	29,938	87,6	87,6	89 0	89,5	86,2	84,7	0,3	0	25	24,6	27	28	28,5	22	Variable.	Cloudy—hazy with some rain—lightning
28	29,940	30.000	29,998	29,940	29,905	29,926	84,0	87,0	88,0	89.5	87,0	86,8	0	0	25	26	27	30	31	30	W. and S. E.	Cloudy—hazy with some rain-lightg.
29	29,938	29.972	29,985	29,912	29,928	29,928	85,5	88,0	90,0	91,2	82,5	83,3	0	0	29	29,7	31,5	33	29	27	N. W. and S. E.	Clear—cloudy
30	29,968	29,988	30,000	29,945	29,918	29,928	84,4	87,0	88,8	89,2	87,0	86,2	0,5	0	24	26	27	28,5	25	24,5	Variable.	Mostly clear—some rain
31	29,990	30,000	29,999	29,945	29,965	29.970	84,5	87.4	90,0	90,6	87,8	86,5	0	0	25	29,5	31,5	30,5	29 5	30	N. W. & Calm.	Mostly clear—lightning

	Barometer. Inches.	Thermometer. Degrees.
General Mean.....	29,9225	88,0
Greatest Height....	30,010	94,0
Least..............	29,835	82,0
Extreme Difference..	00,175	12,0

	Rain Inches.
Observed..	4,8
Reduced..	1,2

	Hygrometer. Dry. Deg.
Greatest Height	40,5
Least............	21.0
Mean.............	30.75
Extreme Difference..	19,5

PHASES OF THE MOON.

	D.	H.	M.
First Quarter..................	7	2	9 A.
Full Moon......................	15	9	40 M.
Last Quarter...................	22	7	15 M.
New Moon.......................	29	7	33 M.

In this Month

The Moon had receded to the greatest distance on the 7th.

The nearest approach of the Moon to the Earth was on the 20th.

August 1821.

Days.	Barometer,						Thermometer (exposed to a free current of air.)						Rain Gauge.		Hygrometer.						Winds.	Weather, &c.
	Sun rise.	10 o'clock.	Noon.	2 o'clock.	Sun set.	8 o'clock.	Sun rise.	10 o'clock.	Noon.	2 o'clock.	Sun set.	8 o'clock.	From Sun-rise to Sun-set.	From Sun-set to Sun-rise.	Sun-rise. Dry.	10 o'clock Dry.	Noon. Dry.	2 o'clock. Dry.	Sun-set. Dry.	8 o'clock. Dry.		
	inches.	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	deg.	inch.	inch.	d.	d.	d.	d.	d.	d.		
1	29,995	30,015	30,010	29,998	29,948	29.940	83,8	85,5	86,2	86,0	83,2	83,5	o	0,3	24	24,5	24	23,5	22	22	Variable:	Cloudy—hazy with some rain.
2	29,952	29,968	29,950	29,933	29,915	29.920	83 6	87,0	88,2	89,4	84 8	83,5	0,5	o	22,5	23,5	27	25	22	22,5	Variable.	Hazy—cloudy with some rain & lightning.
3	29 915	29 965	29,955	29 918	29,868	29.873	83,0	85,0	86,2	87,0	87 0	86.5	4,7	o	22	22	24	25.5	25,5	25	Variable.	Hazy.
4	29,915	29 955	29,948	29,918	29.900	29,915	80 0	83,8	85,4	86,5	85,2	84,3	0,4	o	22	23,5	24	24,5	24	23,5	Calm & W.	Cloudy—hazy with some rain.
5	29 928	29,965	29,965	29,935	29,000	29.915	84,2	83,5	84,4	84,5	84,8	83,4	o	o	24	23 5	24	24	24	24	W.	Cloudy
6	29,900	29,930	29,925	29,900	29,868	29,868	84,0	84,5	85 8	87.0	86,0	86.2	o	o	25	28,5	26	28,5	29,5	28	W.	Cloudy—hazy
7	29 888	29 900	29 888	29 855	29,862	29.868	82,6	85,2	87.5	89,0	86,2	84,5	o	o	26	28,5	30	32	27,5	24	W.	Cloudy—some rain
8	29 900	29 878	29,870	29,848	29,825	29,945	83,5	85,2	87 0	87,8	85,6	84,8	0,2	0,3	24	26	27	29	26 5	24	W.	Cloudy—some rain
9	29.862	29,905	29,878	29 855	29,838	29,828	83,5	86,8	87,5	88,5	83,5	84,6	o	0,2	26 5	27,5	29	30	25,5	24	N. W. to S. W.	Cloudy—some rain
10	29,858	29,920	29,935	29,905	29,878	29.910	84,0	87,2	88.0	89,2	88,0	87,5	o	o	25	27	29	30	32	32,5	W.	Cloudy—hazy
11	29.945	29,975	29,965	29,925	29,878	29,915	85,0	87,0	89 0	90,5	90,4	87,2	o	o	30	31	33,5	34	35	30	W.	Cloudy—hazy
12	29,970	29,998	29,988	29 982	29,925	29.945	85,8	83,4	90,0	90,4	90.5	89,5	o	o	31,5	32	33.5	33,8	35	32	Variable.	Mostly cloudy
13	29 990	29,995	29,928	......	29,920	29 970	86,8	89 0	91,2	....	90,5	88.5	o	o	32	33	34	0	33	30	W. & Calm.	Mostly clear—some rain
14	29,958	30,000	29,978	29,965	29.965	29 935	87,0	87,2	89 8	89,8	87 0	86,5	o	o	29	30	31	32	28,5	29	S. W. & S. E.	Mostly clear—some rain
15	29 955	29,985	29,980	29,968	29,938	29,945	85,0	87,0	87,5	88,0	88,0	86,8	2,7	o	25	27	0	30	29,5	29	Variable.	Hazy—cloudy
16	29 988	29,985	29,980	29.955	29.900	29 905	85,0	87,0	89,8	89,6	87,0	86,5	o	o	29	28,4	29	31,5	28	26	Variable.	Hazy—clear
17	29,945	29,948	29 935	29,918	29,848	29 850	86,0	87,4	90 4	90 4	89 8	89,5	o	o	27	29	32	33	34	34	Variable:	Hazy—clear
18	29,888	29,910	29 900	29,865	29,835	29 838	86,3	88,2	90,4	91,2	87,0	89,4	o	o	32	32	33,5	35	32	32,5	S. W. & S. E.	Hazy—clear
19	29,888	29.935	29,925	29,875	29,835	29,865	86,0	89,6	90,5	91,2	89,5	89,2	o	o	29	30 5	32	34	33,5	33	Variable.	Hazy—clear—halo round the Moon.
20	29 910	29,945	29,935	29,898	29,878	29 900	86,5	87,8	90.5	91,5	90,6	90,0	o	o	31,5	32,7	33	34.5	34,5	35	S. W. & N. W.	Hazy
21	29 910	29,968	29,965	29,925	29,915	29,938	86,0	88,5	90,6	92,0	90,8	87,2	o	o	32,5	33	34	36	35	33	S. W. & N. W.	Hazy—flying clouds
22	29,960	30,015	30,000	29 938	29,918	29,925	86,5	88,2	89,8	91,0	90,5	88.5	o	o	31	32	33	34	35	35	Variable.	Hazy
23	29 980	30,015	30,000	29 935	29,936	29,935	86,2	89,0	90,8	92,7	91,5	90,5	o	o	33	32,5	34	35	37	34	W. & S. E.	Clear—lightning to the S. E.
24	29,940	29,995	29.975	29,945	29,925	29,930	87,2	90,5	92.0	93,2	87,5	86 4	o	o	31	32,5	35	35,5	30	28	W. & S. E.	Clear—hazy with some rain.
25	29 975	29,988	30,000	29,955	29 930	29.935	86,5	88,8	91,0	92,5	86 7	86 0	o	o	29	32,5	35,5	35	31,5	30	Variable.	Mostly clear—distant lightning
26	30.000	30,005	30.000	29,945	29,935	29,950	81,0	87,5	89 4	90,2	85,6	85,2	3,4	o	26	28,5	29,5	32	28	28	Variable.	Hazy—some rain
27	29 955	29 984	29,982	29.953	29,915	29.928	83,5	87,2	88,8	89,8	87 0	85,5	o	o	28	31	32	33	30	28,5	W. & S. E.	Clear
28	29,950	29 978	29 975	29,938	29 915	29,918	84,2	87 6	89,8	90,2	86,6	86,2	o	o	29	30,5	32.5	31,5	29	29	W. & S. E.	Clear
29	29 935	29.970	29,975	29,930	29.905	29,925	84,5	87.5	90,0	91,5	87,5	85,8	o	o	26	29	32	31	29,5	26,5	W. & S. E.	Clear
30	29,970	30,018	30,010	29,978	29,948	29.965	85,5	87 8	96,0	90,2	86,5	86,0	o	o	27	28	29	28	27	25	W & S. E.	Clear—hazy
31	30.068	30.022	30 010	29 965	29,955	29 975	86,0	88,5	90 5	91,0	85.5	81,2	o	o	26	28	31.5	31	24	24	W. & S. E	Clear—distant lightning

	Barometer. Inches.	Thermometer. Degrees.
General Mean	29 948	86,75
Greatest Height	30,068	93,35
Least	29,828	80,0
Extreme Difference	00,240	13,5

Rain.
Inches.
Observed 12,7
Reduced 3,175

Hygrometer.	Dry. Deg.
Greatest Height.....	36,0
Least Height.......	22,0
Mean..............	25,4
Extreme Difference.	14,0

PHASES OF THE MOON.

	D.	H.	M.
First Quarter	6	7	31 M.
Full Moon	13	7	29 A.
Last Quarter	20	0	10 A.
New Moon	27	8	38 A.

In this Month

The Moon had receded to the greatest distance on the 4th.
The nearest approach of the Moon to the Earth was on the 16th.

September 1821.

Days.	BAROMETER.						THERMOMETER. (*exposed to a free current of air.*)						RAIN GAUGE.		HYGROMETER.						WINDS.	WEATHER, &c.
	Sun rise.	*10 o'clock.*	*Noon.*	*2 o'clock.*	*Sun-set.*	*8 o'clock.*	*Sun rise.*	*10 o'clock.*	*Noon.*	*2 o'clock.*	*Sun-set.*	*8 o'clock*	*From Sun-rise to Sun-set.*	*From Sun-set to Sun-rise.*	*Sun rise.* Dry.	*10 o'clock.* Dry.	*Noon.* Dry.	*2 o'clock.* Dry.	*Sun set.* Dry.	*8 o'clock.* Dry.		
	inches.	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	deg.	inch.	inch.	d.	d.	d.	d.	d.	d.		
1	29,968	30,018	30,020	29,945	29,942	29,975	80,0	87,5	88,5	88,0	86,2	85 5	7,0	0	24	22	25	23	24	22	Calm & S. E.	Clear—cloudy with hard rain
2	30,020	30,055	30,035	30,000	30,000	30,020	81,5	85,5	87,5	88,8	86,0	85,5	1,5	0	23	24	28	25,5	25	24	W. & S. E.	Clear—cloudy with some rain
3	30,010	30,022	30,015	30,018	29,928	29,925	82,0	86,0	87,0	87,5	87,0	85,4	2,5	0	22	22	23,5	22	22	21	W. & S. E.	Clear—some rain
4	29 930	29,975	29,990	29,935	29,918	29,940	81,0	86,7	86,8	87,0	86,2	85,5	0,3	0	21,5	20 5	22,0	21	23	22,5	W. & S. E.	Hazy—some rain
5	29,978	30,000	29,998	29,955	29,945	29,968	83,0	87,5	88,8	89,2	87,2	86,5	0	0	22	23	24	24	25	24	S. E.	Clear
6	30,000	30,025	30,025	29 988	29,938	29,950	83 4	87,0	88,5	88,0	86,2	86,5	0	0	22	23,5	24	23	23	22	Variable.	Hazy
7	29,938	30,000	29 975	29,954	29,945	29,942	82,0	87,0	88,8	88,0	85,4	83,6	0,3	0,2	21	23	27	24	23	23	S. W. & S. E.	Hazy—cloudy with some rain
8	29,998	29,999	29,965	29,935	29,920	29,945	84,5	86,6	89,5	89,5	85,4	85,0	0	0	24,5	25	26	25	22	22	S. W. & S. E.	Clear—cloudy
9	29,948	29,968	29,960	29,915	29,900	29,900	83.0	85,5	87,6	89.4	87,2	84,0	1,8	0	21	22	22	26,5	25	22	Variable.	Clear—cloudy with some rain
10	29,925	29,980	29,975	29,915	29,888	29,900	81,5	84,5	85,0	86,0	86,0	85,5	1,0	0	19	20	21	22	21	20	Variable.	Hazy
11	29,910	29,984	29,960	29,875	29,868	29,900	82,2	83,0	83,5	85 2	85,0	84,0	1,0	0,5	20	20,5	21	20,5	20	17	Variable.	Cloudy—some rain with thunder and lightning.
12	29,920	29,975	29,925	29,975	29,845	......	80,0	84,0	84,6	85,4	84,4	....	0	0	17	17	17,5	18	18,5	....	Variable.	Cloudy—hazy
13	29,865	29,900	29.898	29,845	29,838	29,848	80,4	82,0	82,2	85,0	83,0	83,5	1,6	1,8	16	16,5	16	27	22	15	Variable.	Hazy
14	29,870	29,900	29,888	29 865	29,825	......	80,0	84,0	86,4	85,0	81,5	....	0,6	5,0	16,5	15	15,5	15	16	....	Variable.	Hazy—cloudy with some rain
15	29,900	29,945	29,945	29 985	29,865	29,875	80,0	83,0	85,0	86,0	84,2	83,5	1,8	0	16	15,4	17	18,5	17	17	Variable.	Hazy—cloudy with some rain
16	29,938	29,935	29,940	29,918	29,880	29,888	82,8	84,5	87,6	86,5	84,5	84,0	0	0	15,5	15,5	15	15	15	14,5	S. E.	Hazy—distant lightning
17	29,930	29 938	29,940	29,910	29,878	29,900	82,8	84,6	87,2	86,5	86,0	85,5	0	0	15,5	16	18	17	17	17	S. E. to S. W.	Hazy—clear
18	29,938	29,960	29,960	29,938	29,920	29,925	83,0	85,0	88,8	88,0	84,6	83,4	0	0	17,5	18	18,5	18,5	19	18,5	Variable.	Hazy—clear
19	29,934	29,965	29,970	29 925	29,920	29,940	84,4	86,6	89,5	88,0	85,6	84,7	0	0	16	18	18	18	17,5	18	Calm.	Hazy—clear
20	29,945	29,970	29,965	29,918	29,888	29,912	84,0	85,3	87,2	88,2	84,8	84,0	0	0	17	17	17	17,5	17	17	Calm & S. E.	Hazy—cloudy
21	29,900	29.927	29,925	29,978	29,835	29 885	82,5	85,0	89,2	88.4	85,5	83,5	0	0	17	18	19	19	19	17,5	Variable.	Hazy at times—cloudy—rain
22	29,888	29,900	29 915	29,868	29,845	29,858	81,8	83,0	85,2	86,4	85,0	85,0	0,7	0	17	17	19	19,5	19	19	Variable.	Cloudy—hazy
23	29,888	29,928	29,930	29,888	29,858	29,888	82,8	84,4	86,0	86,7	86,0	85,8	0	0	19	22	22,5	23	23	23,5	W. and S. E.	Clear—hazy
24	29,900	29,945	29,945	29,900	29,868	29,888	82,5	85,0	86,2	87,0	86,5	86,0	0	0	22	25	26	27	26	26	W. and S. E.	Hazy
25	29,900	29,945	29,942	29,884	29,878	29 865	82 8	85,6	87,5	88,4	87,0	86,5	0	0	24	25	27,5	29,5	28	26,5	Variable.	Clear—hazy
26	29 900	29,965	29,970	29,928	29,905	29,935	83,5	86,5	87,8	89,5	86,2	85,0	0	0	21	25	27,5	28	27	25	S. W. & S. E.	Clear—cloudy with lightning
27	29,918	30,000	30,005	29,965	29,955	30.000	85,0	86,0	86,4	88,0	85,6	85,0	0	0	28	20	22	22	22	21,5	S. W & S. E.	Hazy—cloudy with lightning
28	30,005	30,025	30,005	29,968	29,955	30,018	84,0	86,2	87.8	88,8	84,4	84,8	0	0,2	19	20 5	21	27	20	21,5	S. W. & Calm.	Clear—cloudy with some rain
29	30,025	30,035	30,025	29,965	29,970	30,010	81,0	86,0	88,8	90,0	83,0	83,5	0	1,4	19	19,5	20	22	20	19	S. W. & S. E.	Mostly cloudy with some rain—vivid lightg.
30	30 025	30.088	30.100	30,035	30,015	30,035	80,0	85.0	87,5	88 0	84,2	84,0	0	0	19	18.5	19,5	19	18,5	18	S. E.	Hazy and clear

	Barometer. Inches.	Thermometer. Degrees.
General Mean....	29,9565	85,0
Greatest Height..	30,088	90,0
Least...........	29,825	80,0
Extreme Difference	00,263	10,0

Rain.	Inches.
Observed..	29,2
Reduced..	7,3

	Hygrometer Dry. Deg.
Greatest Height...	29,0
Least...........	16,0
Mean............	22,5
Extreme Difference	13,0

PHASES OF THE MOON.

	D.	H.	M.
First Quarter..............	5	0	28 M.
Full Moon..................	12	4	42 M.
Last Quarter...............	18	7	10 A.
New Moon...................	26	0	27 A.

In this Month

The nearest approach of the Moon to the Earth was on the 12.h.
The Moon had receded to the greatest distance on the 28th.

October 1821.

Days.	BAROMETER.						THERMOMETER (*exposed to a free current of air.*)						RAIN GAUGE.		HYGROMETER.						WINDS.	WEATHER, &c.
	Sun rise.	*10 o'clock.*	*Noon.*	*2 o'clock.*	*Sun set.*	*8 o'clock.*	*Sun rise.*	*10 o'clock.*	*Noon.*	*2 o'clock.*	*Sun set.*	*8 o'clock.*	*From Sun-rise to Sun-set.*	*From Sun-set to Sun-rise.*	*Sun rise.* Dry.	*10 o'clock* Dry.	*Noon.* Dry.	*2 o'clock.* Dry.	*Sun set.* Dry.	*8 o'clock.* Dry.		
	inches.	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	deg.	inch.	inch.	d.	d.	d.	d.	d.	d.		
1	30,055	30,100	30,088	30,055	30,038	30,050	82,0	86,2	88,0	87,8	85,6	83,8	0	0	18	19	20	20	20	19,5	Calm & S. E.	Clear—lightning all night
2	30,100	30.115	30,088	30,045	30,005	30,020	82,8	86,0	88,5	88,0	84,5	83,4	0	0	18	19	19,5	19,5	19	19,5	Calm & S. E.	Clear—distant lightning
3	30,055	30,058	30,050	29,975	29,945	29,970	83,3	87,0	88,7	83,5	85,5	84,0	0	0,3	18	19,5	19	19	18,5	16,5	Variable.	Clear—hazy with some rain
4	30,000	30,022	30,015	29,948	29,900	29,950	80,0	86,0	88,2	88,0	86,2	85,2	0,3	0	16	18	18,5	18,5	17,5	18	S. W. & S. E.	Mostly clear—some rain
5	29,975	30,015	30,000	29,945	29,923	29,950	81,8	87,0	89,8	89,2	85,5	85,0	0	0	18	18,5	19	18	18	19	Calm & S. E.	Clear—hazy with some rain
6	30,000	30,035	30,018	29,968	29,975	29,988	80,0	86,5	87,4	85,6	85,5	85,0	1,4	0,2	16	17,5	18,5	18,5	17,5	27,5	Variable.	Cloudy—rain with thunder & lightning
7	30,000	30,055	30,025	29,988	29,965	30,000	81,5	84,8	86,0	84,8	85,0	83,2	0,2	0,3	17	17,5	18	17,5	16,5	17,0	Variable.	Cloudy—rain with thunder & lightning
8	30,005	30,035	30,038	29,967	29,970	30,000	81,2	85,0	87,0	86,4	85,0	85,2	0	0	18	16,5	17	21	20	19,5	N. E. & N.W.	Clear—hazy
9	30,018	30,040	30,025	30,000	29,978	29,988	82,4	85,5	87,5	87,0	86,0	85,2	0	0	18	18	19,5	20	21	21	N. E.	Clear—hazy
10	30,000	30,045	30,028	29,978	29,975	30,000	83,0	86,0	87,5	89,5	85,0	83,5	0	0	17	19	24	24	25	23	Variable.	Clear—hazy—dew
11	30,020	30,088	30,086	30,018	30,005	30,045	83,0	85,5	87,8	88,0	86,0	84,5	0	0	17	18	22	24	27	27	Calm & S. W.	Clear—dew at night
12	30,035	30,110	30,100	30,042	30,018	.....	80,5	85,0	86,5	87,4	86,0	....	0	0	21	22	28	30	29	....	Variable.	Clear—dew at night
13	30,088	30,110	30,110	30,058	30,025	30,055	80,5	86,0	87,0	86,3	86,0	85,5	0	0	25	22	24	20	25	24	Calm & S. E.	Clear—dew at night
14	30,085	30,108	30,110	30,072	30,055	30,074	81,4	86,2	89,2	88,0	86,5	85,5	0	0	21	21,5	24	24,5	24	24	Calm & S. E.	Clear
15	30,100	30,145	30,124	30,078	30,065	30,100	83,0	88,0	89,0	88,5	86,7	84,8	0	0	22	24	25,5	23,5	24	23	Calm & S. E.	Clear—dew
16	30,102	30,130	30,125	30,075	30,065	30,100	84,0	86,5	89,5	89,0	87,5	87,0	0	0	24	21	22	23	23	23,5	Calm & S. E.	Hazy—clear with distant lightning
17	30,088	30,130	30,135	30,084	30,100	30,088	84,5	85,5	87,5	85,0	85,0	83,2	0	1,6	21	20,5	19	19	20	18	Calm & S. E.	Hazy—cloudy with some rain
18	30.100	30,136	30,130	30,075	30,078	30,100	83,5	85,0	83,2	84,5	83,0	82,0	0	0,5	18	17	17,5	16,5	17	17	N. E.	Cloudy—some rain
19	30,075	30,135	30,120	30,085	30,100	30,075	82,4	84,0	82,5	82,0	83,0	82,4	0	0	18	17	16,5	17	22	22	Calm & N. E.	Cloudy—hazy—dew at night
20	30,078	30,122	30,120	30,075	30,043	30,100	79,0	83,3	84,5	84,5	83,5	78,5	0	0	20	23	24	26	27,5	26	Variable.	Clear—cold—dew
21	30,067	30,118	30,110	30,065	30,055	30,070	78,0	83,3	83,3	88,5	82,5	80,0	0	0	25	27	28	30	30	29,5	N. E. & E.	Clear—cold—dew
22	30,100	30,120	30,126	30,076	30,075	30,100	78,0	84,0	83,5	83,3	83,2	79,0	0	0	26	27	26,5	29	27,5	27	N. E.	Clear—heavy dew at night
23	30,118	30,140	30,130	30,080	30,070	30,100	75,2	85,0	86,2	86,2	84,0	81,4	0	0	25	25,5	26	27	25	25	Fresh N. E.	Clear—cloudy with dew at night
24	30,065	30,110	30,040	30,045	30,025	30,054	76,0	79,0	83,0	81,6	80,0	79,0	0,6	1,5	18,5	15	11,5	11	10	95	N. E.	Cloudy—some rain
25	30,040	30,100	30,088	30,055	30,045	30,065	80,4	84,5	85,0	86,4	84,4	83,6	1,7	0,2	9	9	10	11,5	12	12	S. E. and E.	Mostly hazy—clear with some rain
26	30,075	30,113	30,108	30,056	30,060	30,070	81,0	85,3	86,0	86,2	84,2	82,2	0	0	12	12	12,5	13,5	13	15	S. E. and E.	Clear—distant lightning
27	30,100	30,115	30,115	30,070	30,055	30,100	81,2	84,2	85,5	84,4	85,0	83,5	0	0	14,5	13	13,5	14	15,5	15	S. E.	Hazy
28	30,110	30,126	30,120	30,095	30,100	30,105	80,2	83,0	85,0	85,7	83,0	82,0	0,7	1,5	15,0	15	15	14,5	14,5	14	Variable.	Cloudy—hazy with some rain
29	30,100	30,136	30,120	30,070	30,040	30,050	78,0	81,0	82,7	80,0	77,2	78,0	8,0	6,5	13,0	12,5	12	12	95	90	Calm & N. E.	Cloudy—heavy rain
30	30,048	30,105	30,100	30,044	30,030	30,040	78,4	78,0	77,4	77,3	78,2	79,0	1,6	4,0	10,0	85	75	6	5	4	N. E.	Much rain
31	30,034	30,085	30,075	30,040	30.035	30,040	77,0	79,0	79,5	80,5	80,3	80,2	20,0	1,0	2	15	1	0,5	0,5	0	Variable.	Cloudy—heavy rain the whole night

	Barometer. Inches.	Thermometer. Degrees.
General Mean	30,020	82,4
Greatest Height	30,140	89,8
Least	29,900	75,0
Extreme Difference	00,240	14,8

	Rain. Inches.
Observed	52,1
Reduced	13,02

	Hygrometer. Dry. D-g.
Greatest Height ..	29
Least	1
Mean	15,0
Extreme Difference	28,0

PHASES OF THE MOON.

	D.	H.	M.
First Quarter	4	4	22 A.
Full Moon	11	1	47 A.
Last Quarter	18	5	31 M.
New Moon	26	6	12 M.

In this Month

The nearest approach of the Moon to the Earth was on the 11th,
The Moon had receded to the greatest distance on the 26th.

November 1821.

Days.	Barometer.						Thermometer. (exposed to a free current of air.)						Rain Gauge.		Hygrometer.										Winds.	Weather, &c.
	Sun rise.	10 o'clock.	Noon.	2 o'clock.	Sun-set.	8 o'clock.	Sun rise.	10 o'clock.	Noon.	2 o'clock.	Sun-set.	8 o'clock	From Sun-rise to Sun set	From Sun-set to Sun-rise.	Sun rise.		10 o'clock		Noon	2 o'clock.	Sun set.		8 o'clock.			
															Dry.	Damp.	Dry.	Damp.	Dry.	Dry.	Dry.	Damp.	Dry.	Damp.		
	inches.	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	deg.	inch.	inch.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.		
1	30,075	30,125	30,100	30,025	30,015	30.018	78,0	80,0	82,0	82,5	79,2	79,0	2,5	2,7	0,5	0,5	0	0	0	0	0	0,5	0	1	N. E. & S. E.	Hazy—cloudy with heavy rain
2	30,055	30,135	30,110	30.065	30,035	30,035	78,2	81,0	82,4	83 0	81.5	80,5	5,0	o	0	o	0	0,5	1	1	1,5	o	1	o	Variable	Clear—cloudy—rain all night
3	30,075	30,120	30,118	30,065	30,070	30,100	79,0	81.0	83,0	80,8	78,0	78,2	1,7	6,5	1	o	0,5	0	1	2	0,5	o	0	o	S. E. & N. E.	Cloudy—rain
4	30,110	30,155	30,158	30,125	30,113	30.140	79,5	83,0	84 0	84,6	83,2	81,5	1,0	o	0,5	o	0	0,2	0,5	2,5	3	o	3,5	o	Calm N. E.	Cloudy—some rain
5	30,128	30,153	30,170	30,135	30,126	30,140	77,5	82 0	84,2	84.0	82,3	8',0	o	o	3	o	2,5	o	5,5	7,2	8	o	8	o	N E.	Cloudy—hazy—halo round the moon—dew at night
6	30,110	30,155	30,145	30,100	30,078	30,120	79,0	82,0	83,2	84.4	82,0	80,2	o	o	5,5	o	5	o	5,5	9	10,5	o	8,5	o	N. E.	Hazy—halo round the moon
7	30,115	30,145	30,150	30,100	30 075	30,110	79,0	82,0	83,2	84.4	82,0	80,2	o	o	7,5	o	7	o	8	11	13	o	13	o	N E.	Hazy
8	30,115	30,158	30,150	30,115	30,100	30,145	78,0	82,0	82.2	84,2	81.5	81,2	o	o	11,5	o	11,5	o	12	13	11.5	o	12	o	N. E.	Hazy—cloudy with some rain
9	30,020	30,175	30,155	30,110	30,100	30.120	76,0	78.4	79,2	82,0	81.0	80.2	14,0	0.2	10	o	8	o	7,5	8	9 5	o	9	o	N. E.	Cloudy—heavy rain
10	30,115	30,155	30,120	30,078	30,055	30,055	78.0	79,8	81,0	81,0	81,6	79,5	6,0	2,0	7	o	6	o	5	5	7	o	6	o	N. E.	Cloudy—heavy rain
11	30,058	30,095	30,055	30,005	29.998	30,020	80.0	79 0	81,0	82,2	80,0	79,0	o	o	6,5	o	5,6	o	6	8,5	10	o	9,5	o	N. E.	Cloudy—hazy
12	30,000	30,025	30,025	29.945	29 935	29,970	75.5	80,4	82,0	82,6	79,2	78,0	o	o	8	o	9	o	10,5	12	9,5	o	10	o	N. E.	Hazy dew—cold
13	29 955	30,110	30,000	30,005	29,940	30,000	75,4	78,0	80,3	80,0	79,0	78,0	o	o	11	o	12,5	o	17	17,5	21,5	o	19	o	Calm & N. E.	Hazy air cool
14	30.010	30 058	30,058	30,180	30,010	30,050	74.8	79,0	81,7	82,5	79.2	81,2	o	o	16	o	18	o	20	18	22	o	20	o	Calm & N. E.	Clear—hazy with dew and cold
15	30,005	30,100	30,055	30,087	30,078	30,110	75,2	78 8	81,0	82 8	80,2	78,3	o	o	18,2	o	19	o	19,5	18,5	18,2	o	18	o	Calm & N. E.	Clear—dew at night
16	30,018	30,175	30,165	30,125	30,125	30,140	75.0	79,4	82,6	82,4	80,2	78,0	o	o	16 5	o	16,5	o	19	18,8	20	o	19	o	Calm & N. E.	Clear—heavy dew
17	30,115	30,135	30,130	30,078	30,075	30,076	74,6	79,7	83,0	83,3	79,2	77,7	o	o	17,5	o	17,2	o	20	22	22	o	25,5	o	Calm & N. E.	Clear—heavy dew
18	30,058	30,155	30,048	30,100	30,075	30,110	75.0	79,0	82,4	84,0	80,2	77,0	o	o	21.5	o	20,5	o	22	26,5	28	o	25,5	o	Calm & N. E.	Clear—dew
19	30,060	30,115	30,178	30,150	30,144	30,146	73,0	79,2	81 7	83,0	80,2	77,2	o	o	21,5	o	21,5	o	22.5	25	26.5	o	25,5	o	Calm & N. E.	Clear—air cool—much dew
20	30,170	30,200	30,188	30,145	30,135	30,138	74,0	79,0	81,5	82,5	80,2	77,5	o	o	21	o	19	o	20,5	23	23,7	o	21	o	Calm	Clear—dew
21	30,145	30,200	30,188	30,148	30,145	30,165	73,6	79,2	83,0	82,8	80,0	77,5	o	o	20	o	15	o	20	22	20	o	17	o	Calm & N. E.	Clear
22	30,140	30,205	30,200	30,145	30,135	30,170	73,7	80,2	82,5	83.2	80,5	79,2	o	o	17	o	15	o	19,5	21	18	o	18	o	Calm & N. E.	Clear—dew with cold
23	30,145	30,185	30,175	30,138	30,135	30,155	75,0	80,7	83,3	83,2	81 2	80.0	o	o	17	o	16	o	19	20	21,5	o	21	o	Calm & N. E.	Cealr—dew
24	30,165	30,224	30,118	......	30,145	30,145	76,2	81,0	83,3	....	80,5	79.5	o	o	19,5	o	18,5	o	21,2	0	23	o	23	o	Calm & N. E.	Clear—hazy—dew
25	30,150	30,185	30,135	30,130	30,125	30,140	75,5	81,0	82,2	82,0	80,7	80,0	o	o	20	o	19	o	22	22,5	22,5	o	20,5	o	N. E.	Cloudy—hazy
26	30,135	30,186	30,188	30,135	30,125	30,120	75,5	78,0	78,2	79,6	79 0	77,2	3,6	o	16,0	o	13,5	o	12	6	5,5	o	7	o	N. E.	Cloudy—some showers
27	30,140	30,228	30,200	30.125	30,145	30,160	77,5	81,6	82,5	82,4	80,5	79,5	o	o	8	o	7,5	o	9	11	10,5	o	10	o	N. E.	Cloudy—hazy
28	30,175	30,230	30,220	30,155	30,140	30,150	79.3	82,4	83,4	83,2	80,5	80,8	o	0,2	15	o	15,5	o	17	20	22	o	21,5	o	N. E.	Cloudy—some rain
29	30,165	30,215	30,210	30,178	30.175	30,200	78,2	81,5	83,5	83,3	81,4	81,0	o	o	19	o	17.5	o	18	21	20,5	o	21	o	Fresh N. E.	Hazy—clear
30	30,185	30,187	30.188	30,135	30.138	30,156	78,2	80,4	81,0	82,2	81,5	78,4	o	o	18	o	15.7	o	17,5	20,0	21	o	21	o	N. E.	Flying clouds—hazy—halo round the moon

	Barometer.	Thermometer.
	Inches.	Degrees.
General Mean....	30,115	78,7
Greatest Height..	30,230	84,4
Least..........	30,000	73,0
Extreme Difference	00,230	11,4

Rain.	
	Inches.
Observed..	45,4
Reduced..	11.35

Hygrometer	
	Dry.
	Deg.
Greatest Height...	26.0
Least..........	0,5
Mean..........	13 25
Extreme Difference	25,5

PHASES OF THE MOON.

	D.	H.	M.	
First Quarter..............	3	6	34	M.
Full Moon................	9	11	11	A.
Last Quarter..............	16	7	56	A.
New Moon................	25	0	37	M.

In this Month

The nearest approach of the Moon to the Earth was on the 9.h.

The Moon had receded to the greatest distance on the 22d.

December 1821.

Days.	BAROMETER.						THERMOMETER (*exposed to a free current of air.*)						RAIN GAUGE.		HYGROMETER.						WINDS.	WEATHER, &c.
	Sun rise.	*10 o'clock.*	*Noon.*	*2 o'clock.*	*Sun set.*	*8 o'clock.*	*Sun rise.*	*10 o'clock.*	*Noon.*	*2 o'clock.*	*Sun set.*	*8 o'clock.*	*From Sun-rise to Sun-set.*	*From Sun-set to Sun-rise.*	*Sun-rise.* Dry.	*10 o'clock* Dry.	*Noon.* Dry.	*2 o'clock.* Dry.	*Sun-set.* Dry.	*8 o'clock.* Dry.		
	inches.	inches.	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	deg.	deg.	inch.	inch.	d.	d.	d.	d.	d.	d.		
1	30,185	30,187	30,188	30,135	30,138	30,156	78,5	80,4	81,0	88,2	81,5	78,4	0	0	18	15,7	17,5	20	21	21	North Easterly	Cloudy—clear
2	30,160	30,215	30,198	30,146	30,145	30,155	75,5	78,4	89.5	81,4	79,0	77.5	0	0	18	17,6	20	24	23,5	22	N. E.	Cloudy—clear—dew
3	30,145	30 205	30,175	30,130	30,125	30,130	74,0	79,0	81,5	82,0	80,0	79,0	0	0	21	20,2	20,5	20	17.5	16	N. E.	Cloudy—clear—dew with cold
4	30,135	30,180	30,178	30,140	30,138	30,178	76,5	81.4	81.5	81,5	79,8	77 5	3,0	0	14	15	16	17,5	17,0	18	N. E.	Clear—cloudy with some rain
5	30,198	30,232	30,225	30,178	30,150	30,198	73,5	79,4	81.0	81,0	79,2	78,2	0	0	16	17,5	20	21	22	22	N. E.	Clear—dew
6	30,200	30,245	30,235	30,200	30,198	30,200	76,5	80,5	81,5	81,0	79 0	78,0	0	0	20	20,5	21	22	21,5	21	N. E.	Mostly clear—dew
7	30,203	30,242	30,235	30,175	30,158	30,200	75,6	80.4	81,2	81,2	79,2	79.0	0	0	19,5	20	21	22	22	20	Calm & N. E.	Clear—hazy—some dew
8	30,150	30,200	30,188	30,145	30,125	30,138	76 0	81,2	82,0	81,5	79,5	79.0	0	0	19	19,5	20	20	21	20	N. E.	Clear
9	30,120	30,155	30,160	30,122	30,110	30,118	75,0	80,0	80,0	81.0	79,2	79,5	0	0	16	18	19	20	19	19	Fresh N. E.	Cloudy
10	30,145	30,215	30.205	30,150	30,145	30,155	77,0	79,0	80,8	81,2	79,0	78,8	0	0	19,5	16,5	20	21	21,6	17	Fresh N. E.	Hazy
11	30,128	30,233	30,220	30,155	30,175	30,200	75 7	80,0	81,6	81,0	79.6	79,2	0	0	17	18.5	21	22	23	22	Fresh N. E.	Hazy—cloudy with cold
12	30,198	30,235	30,218	30,179	30,165	30,200	76,0	81,2	81,4	80.4	79,2	78 8	0	0	20	21,2	22	22,5	22	22	N. E.	Hazy
13	30,165	30,220	30,220	30,155	30,145	30,188	76,5	80,0	78,0	78,5	77,0	77 2	0	0	21	23	23	24	23,5	22,5	N. E.	Cloudy—hazy
14	30,168	30,210	30,218	30,175	30,138	30,140	74,5	78,0	81,4	80,2	78,0	77,5	0	0	21	21,5	22,5	25	25	24,5	N. E.	Clear—dew
15	30,150	30,208	30,200	30,165	30,148	30,179	73 6	78,5	78,2	80,5	77,8	76,0	0	0	20	21	24	25	27	25,5	Fresh N. E.	Clear—cloudy
16	30,168	30,210	30,200	30,155	30,145	30,200	73,2	79 2	80,5	81.2	78,0	76,8	0	0	22	22	22	22	19,5	17	Fresh N. E.	Clear—hazy—some dew
17	30,189	30,227	30,210	30,165	30,155	30,200	76,0	78,2	81,2	81 0	79,2	77,2	0	0	17	15	17	19	20	20	N. E.	Cloudy—hazy—some rain
18	30,200	30,255	30,148	30,188	30,178	30,200	75,0	78,5	80 0	80,4	78,0	75,2	0	0	18,5	18,5	21	20	22	19	N. E.	Clear—dew
19	30,198	30,245	30,222	30,168	30,158	30,165	73,2	77,5	80,2	80.5	77,5	75.2	0	0	19	18,5	21,5	22,5	20,5	19,5	Calm & N. E.	Clear—much dew
20	30 170	30,214	30,200	30,148	30,135	30,136	71,0	77,4	79,2	79,8	78,2	76,0	0	0	19	17	20	22	22	20	Calm & N. E.	Clear—thick fog
21	30,138	30,165	30,155	30,115	30,100	30,110	73,0	79,0	81,0	81,8	78,0	76,0	0	0	19	20	22	24	23	21	Calm & N. E.	Clear—dew
22	30,112	30,160	30,155	30,125	30,115	30,125	74,4	79,0	80,4	81,9	78 2	76,2	0	0	19	19	22	22	23	22	N. E.	Clear mostly
23	30,165	30,215	30,200	30,165	30,148	30,200	74,0	78.8	80,5	81,0	79,0	85,0	0	0	20	19,4	21,2	21	20	21	N. E.	Cloudy & foggy
24	30.165	30,200	30,200	30 148	30,128	30,125	76,0	80,6	81,2	82,0	80,0	79,2	0	0	18	20	15	14,7	13,2	13	N. E.	Cloudy—some rain
25	30,120	30,165	30,155	30,115	30,115	30,125	76,0	80,6	81,2	82,0	80,0	79,2	0	0	12	13,6	16	19	17,5	17	N E.	Cloudy & hazy
26	30,150	30,215	30 200	30,158	30,145	30,198	75,0	75,7	78,0	79.0	78,0	79.0	10.0	1,6	13	11.5	10	8	9	75	N. E.	Cloudy & heavy rain all night
27	30,175	30,225	30,210	30,175	30.165	30,188	77,0	79 0	80,6	81,0	79,0	77,5	2,5	0,3	65	55	65	8	10	10,5	N. E.	Cloudy—hazy with heavy rain
28	30 205	30,246	30,245	30,225	30,200	30,220	77,0	80,0	81,0	80,5	79,0	77,0	0	0	11	13	15	15	17	18	N. E	Clear
29	30,204	30,250	30,245	30,185	30,200	30,205	77,2	79,5	80,5	80 2	78,4	77,2	0	0	15,5	16	18,5	19	19,5	18,5	Calm & N. E.	Clear
30	30,198	30,235	30,220	30.175	30 158	30,175	73,0	78.0	80,2	80,2	78,2	77,2	0	0	15	15	17	17,5	18	17,5	N E.	Cloudy—hazy & clear, with some dew—air cold
31	30,155	30,178	30,160	30,135	30,120	30,135	75,0	79,2	81,4	80,5	79,2	78,5	0	0	15,5	13,5	15	14,8	15.5	15	N. E.	Clear—dew at night

	Barometer. Inches.	Thermometer. Degrees.
General Mean	30,1825	76,5
Greatest Height	30,255	82,0
Least	30,110	71,0
Extreme Difference	00,145	11,0

Rain.	Inches.
Observed	17,4
Reduced	43,5

Hygrometer.	Dry. Deg.
Greatest Height	24,5
Least Height	8,0
Mean	16,25
Extreme Difference.	16,5

PHASES OF THE MOON.

	D.	H.	M.
First Quarter	2	6	32 A.
Full Moon	9	9	25 M.
Last Quarter	16	2	10 A.
New Moon	24	6	27 A.

In this Month

The nearest approach of the Moon to the Earth was on the 7th.

The Moon had receded to the greatest distance on the 19th.

Table of the Mean, Greatest, *and* Least *Heights; with the* Extreme Differences, *of the* Barometer, *and* Thermometer *exposed; together with the* Fall *of* Rain, *at the* Madras Observatory *in the year* 1821.

Months.	Barometer.				Thermometer. (*exposed to a free current of air*)				Rain Gauge.	
	Mean.	*Greatest.*	*Least.*	*Extreme difference.*	*Mean.*	*Greatest.*	*Least.*	*Extreme difference*	*Observed.*	*Reduced.*
	inches.	inches.	inches.	inches.	deg.	deg.	deg.	deg.	inches.	inches.
January	30,10803	30,270	29,920	00,250	79 401	85,5	70,8	14,7	14,4	3,6
February	30,1531	30,278	30,000	00,278	80,51	87,5	70,0	17.5	,,	,,
March	30,0896	30,215	29,945	00,270	83,945	90,2	74,5	15.7	1,3	0,32
April	30,0640	30,217	29,950	00,267	80,7	94,4	78,2	16,2	6,8	1,7
May	29,9080	30,128	29,689	00.439	89,05	96 5	82,5	14,0	,,	,,
June	29 938	30,048	29,828	00,220	91,6	100,5	82.7	17.8	4,4	1,1
July	29,9225	30,010	29,835	00,175	88,0	94,0	82,0	12,0	4,8	1,2
August	29,948	30,068	29,828	00,240	86,75	93,35	80,0	13,5	12,7	3,175
September	29,9565	30,088	29.825	00.263	85,0	90 0	80,0	10,0	29,2	7,3
October	30,020	30,140	29.900	00.240	82.4	89 8	75,0	14,8	52,1	13,02
November	30,115	30,230	30,000	00,230	78,7	84,4	73,0	11,4	45,4	11,35
December	30,1825	30,255	30,110	00,145	76,5	82,0	71,0	11,0	17,4	4,35

	Barometer.	Thermometer Exposed.	Rain Gauge.	
			Observed	*Reduced.*
	inches.	degrees.	inches.	inches.
General Mean	30,0034	83,53		
Greatest Height	30,278	100,5	188,5	47,12
Least Height	29,689	70,0		
Extreme Difference	00,589	30,5		

During the Year

The Moon was nearest to the Earth on the 2d of April and 11th of October.

The Moon was at the greatest distance from the Earth on the 15th of April and 26th of October.

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